



1 Write the ratio between the two numbers 21 and 9 in the simplest form.

2 Complete the following table:

The antecedent of the ratio	The consequent of the ratio	The forms of the ratio	
3	5	$\frac{\dots\dots\dots}{\dots\dots\dots}$	3 : 5
7	10	$\frac{\dots\dots\dots}{\dots\dots\dots}$	$\frac{\dots\dots\dots}{\dots\dots\dots}$
$\frac{\dots\dots\dots}{\dots\dots\dots}$	$\frac{\dots\dots\dots}{\dots\dots\dots}$	$\frac{7}{5}$	$\frac{\dots\dots\dots}{\dots\dots\dots}$
$\frac{\dots\dots\dots}{\dots\dots\dots}$	$\frac{\dots\dots\dots}{\dots\dots\dots}$	$\frac{\dots\dots\dots}{\dots\dots\dots}$	3 : 11

3 Write the ratio between the two numbers in each of the following in its simplest form:

(a) $\frac{19}{114}$

(b) $\frac{36}{72}$

4 In one of the classes of the first grade primary, the number of boys is 15 pupils and the number of girls is 20 pupils. Calculate:



- (a) The ratio between the number of boys and the number of girls.
- (b) The ratio between the number of girls and the number of all pupils in the class.
- (c) The ratio between the number of boys and the number of all pupils in the class.

5 Write each of the following ratios in its simplest form:

(a) 2.5 : 5.75

(b) $0.84 : 2\frac{3}{9}$

6 Express the ratio between the two numbers 8 and 12 by two methods.

7 In the opposite figure, complete:

(a) Number of coloured parts : all parts of the figure =

(b) Number of non-coloured parts : all parts of the figure =

(c) Number of coloured parts : number of non-coloured parts =



First Meaning of the ratio

1 Choose the correct answer:

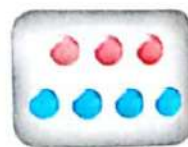
- (a) The ratio between two numbers = $\frac{\text{the number}}{\text{the second number}}$
(second **or** first **or** third **or** fourth)
- (b) If 7 and 8 are two quantities of the same kind, then $\frac{7}{8}$ is called
a/an (ratio **or** factor **or** multiplication **or** addition)
- (c) A ratio is a comparison between two quantities by
(ratio **or** addition **or** division **or** multiplication)
- (d) The first term of the ratio $\frac{6}{7}$ is ($\frac{1}{7}$ **or** 7 **or** 6 **or** $\frac{1}{6}$)
- (e) The second term of the ratio $\frac{2}{7}$ is (1 **or** 7 **or** $\frac{1}{7}$ **or** $\frac{7}{2}$)
- (f) If a is a half of b , then $a : b = \dots\dots\dots$ (2 : 1 **or** 1 : 2 **or** 1 : 3 **or** 3 : 2)

2 Complete the following:

- (a) If 3 and 8 are two quantities of the same kind, then 3 : 8 is called
- (b) The first term of $\frac{4}{11}$ is (c) The second term of $\frac{3}{5}$ is

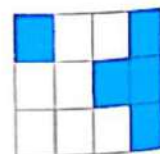
3 Using the opposite figure, complete:

- (a) Number of red balls : number of blue balls = :
- (b) Number of blue balls : number of red balls = :
- (c) Number of red balls : number of all balls = :



4 Using the opposite figure, complete:

- (a) Number of shaded parts : number of all parts = :
- (b) Number of unshaded parts : number of all parts = :
- (c) Number of shaded parts : number of unshaded parts = :



Second Expressing the ratio

5 Choose the correct answer:

- (a) The number 2 in the ratio 2 : 3 is called
(antecedent **or** consequent **or** second **or** ratio)
- (b) In the ratio $\frac{4}{9}$ the consequent (second term) is (4 **or** 9 **or** $\frac{1}{9}$ **or** $\frac{1}{4}$)

(c) The ratio $\frac{3}{4}$ can be written as (3 : 4 or 4 : 3 or $\frac{4}{3}$ or 1 : 3)

(d) The antecedent of the ratio between 8 and 19 is

(19 or 8 : 19 or 8 or 19 : 8)

(e) If $y = \frac{4}{5}x$, then $x : y =$ (5 : 4 or 4 : 5 or 1 : 5 or 1 : 4)

(f) If $c = \frac{3}{5}d$, then $d : c =$ (3 : 8 or 3 : 5 or 3 : 2 or 5 : 3)

6 Complete the following:

(a) If 6 and 5 are two quantities of the same kind, then $\frac{6}{5}$ is called

(b) The consequent of the ratio 3 : 8 is

(c) If the antecedent of a ratio is 9 and its consequent is 16, then the ratio = $\frac{\dots}{\dots}$

(d) The first term of $\frac{4}{7}$ is

(e) The ratio $\frac{3}{4}$ can be written as :

(f) In the ratio $\frac{5}{8}$, the antecedent (first term) is and the consequent (second term) is

7 Omar went to a clothing store to buy trousers and a shirt, he had 193 pounds. If the price of the trousers was 100 pounds and the price of the shirt was 70 pounds, **complete**:



(a) The ratio between the price of the trousers to the money he had = :

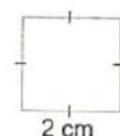
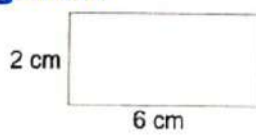
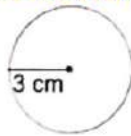
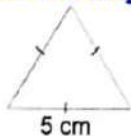
(b) The ratio between the price of the shirt to the money he had = :

(c) The ratio between what he paid to the money which he had = :

8 Write the ratio between 21 and 9 in a fraction in its simplest form.

Cumulative Exercise

9 Complete using the following figures:



(a) The side length of the triangle : the radius length of the circle = :

(b) The side length of the square : the perimeter of the triangle = :

(c) The diameter length of the circle : the length of the rectangle = :

(d) The perimeter of the rectangle : the perimeter of the triangle = :

Think and Explore

10 In the opposite figure, a rectangle is divided into small squares,

find the ratio between the blue part and the red part.





- 1 In the figure below, a square of side length 4 cm and a rectangle whose dimensions are 6 cm and 3 cm, find:

4 cm



3 cm



6 cm

- The ratio between the perimeter of the square and the perimeter of the rectangle.
- The ratio between the area of the square and the area of the rectangle.
- The ratio between the length of the rectangle and its perimeter.

- 2 Find in the simplest form the ratio between each of the following:

- 250 P.T. and $7\frac{1}{2}$ pounds.
- $2\frac{1}{2}$ hours and 75 minutes.
- The two areas: 12 kirats, 1.25 feddans.
- The two areas: 0.75 kirat, 16 sahms.

- 3 Write the ratio between the two numbers in each of the following cases:

(a) $\frac{1}{2}$ and $\frac{3}{4}$

(b) 18 : 6.3

(c) $1\frac{3}{5}$: 2.2

- 4 Complete the following:

- The ratio between the side length of the square and its perimeter = :
- The ratio between the circumference of the circle and its diameter length = :
- The ratio between the length of the side of the equilateral triangle and its perimeter = :

- 5 The area of a rectangle is 32 cm^2 and its width = 4 cm, find:

- The length of the rectangle.
- The ratio between the width of the rectangle and its length.
- The ratio between the length of the rectangle and its perimeter.

- 6 The salary of a cleaning worker is L.E. 400 monthly. He spends L.E. 340 and saves the remainder, **find**:
- a The ratio between what the worker spends to his salary.
 - b The ratio between what he saves to his salary.
 - c The ratio between what he spends to what he saves.



- 7 The following table shows the quantities of the same kind but in different units: Calculate the ratio between each two quantities in each case and complete the table.

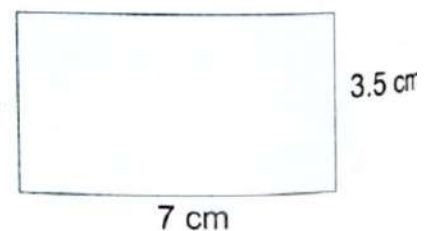
	1 st quantity	2 nd quantity	1 st : 2 nd
a	100 gm	$\frac{1}{4}$ kg	.....
b	8 hours	2 days	.....
c	$\frac{1}{2}$ km	570 m	.....
d	18 kirats	$1\frac{1}{2}$ feddans	.....

- 8 In the opposite figure:

A rectangle with width 3.5 cm and its length = 7 cm.

Find:

- a The ratio between the length and the width.
- b The ratio between the width and the perimeter.
- c The ratio between the length and the perimeter.



First Properties of the ratio

1 Choose the correct answer:

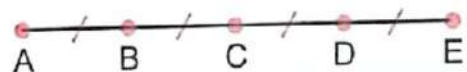
- a) The ratio has the same properties of the
(factor **or** fraction **or** multiplication **or** division)
- b) The two terms of the ratio should be two numbers in their simplest form.
(decimal **or** fraction **or** whole **or** factor)
- c) The simplest form of the ratio 55 : 165 is
(1 : 5 **or** 1 : 4 **or** 1 : 3 **or** 5 : 3)
- d) If A equals half B, then B : A = (1 : 2 **or** 2 : 1 **or** 3 : 2 **or** 2 : 2)
- e) The ratio between $3\frac{1}{5}$ and 9.6 = : ($\frac{2}{3}$ **or** $\frac{1}{3}$ **or** $\frac{3}{2}$ **or** $\frac{1}{6}$)
- f) $\frac{2}{3} : 3\frac{1}{3} = \dots : \dots$ (5 : 1 **or** 10 : 1 **or** 5 : 2 **or** 1 : 5) (Qena 2019)

2 Complete the following:

a) $\frac{5}{4} : 2 = \dots : \dots$ (in its simplest form) (Cairo 2020)

b) $\frac{0.5}{4} = 1 : \dots$ (Dakahlia 2011)

c) In the opposite figure:



The ratio between AC : BE = :

(Aswan 2013)

d) The ratio between 16 and 64 = : (in its simplest form) (Giza 2019)

e) 18 : 6.3 = : (Dakahlia 2014)

3 Write down the ratio of the following in the simplest form:

a) 18 : 54

b) 36 : 27

c) 15 : 24

d) 21 : 9

e) 51 : 17

f) 55 : 121

g) 25 : 75

h) 64 : 128

4 Write down the ratio of the following in the simplest form:

- a** $\frac{1}{3} : \frac{1}{4}$ (Sohag 2019) **b** $\frac{2}{9} : \frac{5}{9}$ **c** $\frac{4}{7} : \frac{2}{7}$
d $\frac{5}{4} : 3\frac{3}{4}$ (Cairo 2018) **e** $2\frac{1}{5} : 2\frac{3}{5}$ **f** $1\frac{1}{6} : 1\frac{5}{9}$
g $1.25 : 3.75$ **h** $64 : 16$ **i** $0.7 : 1\frac{3}{25}$
j $0.875 : \frac{3}{4}$ **k** $0.9 : \frac{3}{4}$ **l** $1.5 : 2.25$

Second More properties of the ratio (Converting units)

5 Choose the correct answer:

- a** Ratios are used only to compare between two quantities of the same
 (ratio **or** units **or** property **or** length)
b The form of the has no units.
 (division **or** ratio **or** fraction **or** factor)
c If x equals triple y , then $x : y = \dots : \dots$ ($1 : 3$ **or** $1 : 1$ **or** $3 : 1$ **or** $1 : 2$)
d $8 \text{ hours} : 1\frac{1}{4} \text{ days} = \dots$ ($15 : 4$ **or** $4 : 15$ **or** $4 : 5$ **or** $1 : 10$) (Cairo 2019)
e $2.5 \text{ m} : 275 \text{ cm} = \dots : \dots$ ($11 : 10$ **or** $11 : 100$ **or** $10 : 11$ **or** $10 : 1$)
f $6.25 \text{ dm}^2 : 875 \text{ cm}^2 = \dots : \dots$ ($5 : 6$ **or** $7 : 5$ **or** $5 : 7$ **or** $6 : 5$)
g $400 \text{ gm} : 2 \text{ kg} = \dots : \dots$
 ($1 : 2$ **or** $1 : 4$ **or** $1 : 8$ **or** $1 : 5$) (Cairo 2020)
h $75 \text{ cm} : 2\frac{1}{4} \text{ metres} = \dots : \dots$ ($\frac{1}{3}$ **or** $\frac{2}{3}$ **or** $\frac{1}{4}$ **or** $\frac{3}{1}$)
i $25 \text{ seconds} : \frac{1}{3} \text{ minute} = \dots : \dots$ ($5 : 4$ **or** $4 : 5$ **or** $3 : 5$ **or** $5 : 3$)
j $\frac{1}{4} \text{ m}^2 : 3500 \text{ cm}^2 = \dots : \dots$
 ($25 : 350$ **or** $0.25 : 3500$ **or** $5 : 7$ **or** $4 : 35$)
k $300 \text{ grams} : 3 \text{ kilograms} = \dots : \dots$
 ($3 : 10$ **or** $1 : 10$ **or** $1 : 20$ **or** $1 : 3$)
l $3 \text{ hours and } 30 \text{ mins} : 280 \text{ mins} = \dots : \dots$
 ($4 : 3$ **or** $21 : 280$ **or** $3 : 4$ **or** $150 : 280$)

6 Complete the following:

- a 12 hours = minutes. b 250 grams = kg.
 c 250 grams : $\frac{1}{2}$ kg = : d 18 hours : one day = :

7 Calculate the ratio between the height of Marry and her mother, if Marry is 0.8 m tall and her mother is 175 cm tall.



8 If Hoda has 35 pounds and she spent 975 P.T., **find:**

- a The ratio between the money left with her and the money she had.
 b The ratio between the money she spent and the money left with her.
 c The ratio between the money she had and the money she spent.



Third Important ratios (for geometrical applications)

9 Choose the correct answer:

- a The ratio between the diameter length of a circle and its circumference (1 : 2π or $1 : \frac{\pi}{2}$ or $1 : \pi$ or $\pi : 1$)
 b The ratio between the side length of a square and its perimeter = (1 : 4 or 4 : 1 or 1 : 1 or 1 : 2)
 c 600 cm : 6 m = : (1 : 1 or 1 : 2 or 100 : 1 or 10 : 1)

10 Complete the following:

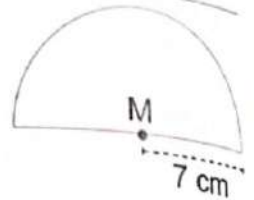
- a The ratio between the circumference of a circle and its radius length = : (Cairo - El-Zeitoun 2018)
 b The ratio between the lengths of two sides of a square = :
 c The ratio between the perimeter of a square and its side length = : (Sohag 2019)
 d The ratio between the lengths of two sides of an equilateral triangle = :

- 11 **Calculate** the ratio between the perimeter of the rectangle whose two dimensions are 66 dm and 44 dm and the circumference of the circle whose diameter length is 2.1 m. $(\pi \approx \frac{22}{7})$



- 12 **In the opposite figure:**

- Find the ratio between the perimeter of this figure and its radius length. $(\pi \approx \frac{22}{7})$



- 13 Two circles, the length of the diameter of the first is three times the length of the diameter of the second. **Find** the ratio between the circumference of the first circle and the circumference of the second circle.



- 14 **Find** the ratio between the length and the width of a rectangle if its length is 8 cm and its perimeter equals the circumference of a circle whose diameter length is 84 mm. $(\pi \approx \frac{22}{7})$



- 15 If the area of a triangle is 36 cm^2 and the length of its height is 0.4 dm, **find** the ratio between the base length of the triangle and its height.

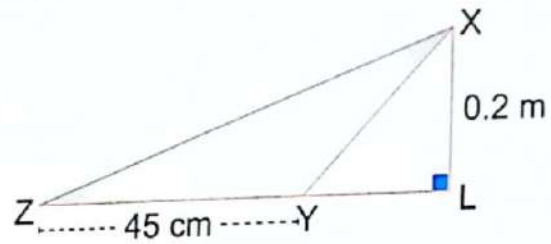
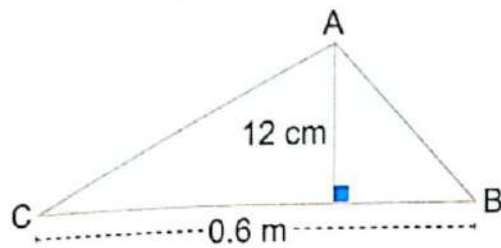


- 16 If the base length of a parallelogram is 8 cm and its corresponding height is 5.25 cm, **find** the ratio between its area and the area of a square whose diagonal length is 7.2 cm.



17 From the following figures:

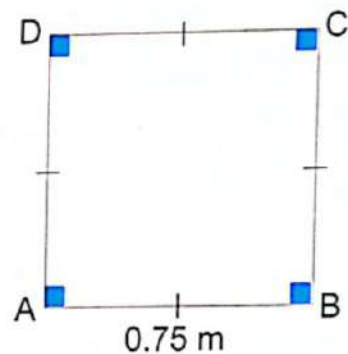
Calculate: The ratio between the area of the triangle ABC and the area of the triangle XYZ.



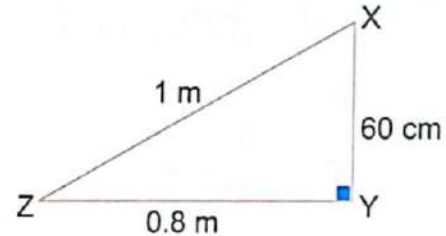
Cumulative Exercises

18 From the opposite figures, calculate:

- a) The ratio between the area of the square ABCD and the area of the right-angled triangle XYZ.



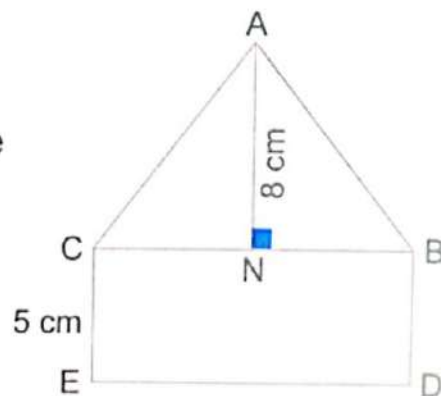
- b) The ratio between the perimeter of the square ABCD and the perimeter of the right-angled triangle XYZ.



Think and Explore

19 In the opposite figure:

If the area of the triangle ABC = 56 cm^2 ,
find the ratio between the area of the triangle
and the area of the rectangle BDEC.





- 1 The ratio between a child's age to his father's age is $2 : 13$. If the child is 6 years, **find** the father's age.



- 2 The ratio between the lengths of two roads is $2 : 5$ and the difference between their lengths is 21 km, **find** the length of each road.



- 3 If the ratio between the number of successful pupils in Arabic to that number in math is $3 : 7$ and if the successful pupils in math is 21 pupils, **find** the number of successful pupils in Arabic.

- 4 The ratio between the area of two pieces of land is $5 : 9$, if the area of one of them is more than the other by 132 m^2 , **find** the area of the other piece of land.

- 5 The ratio between the money that Ahmed has to that which Samira has is $7 : 11$, if the money that they have were L.E. 360. **Find** the money that each of them has.



- 6 A perimeter of a rectangle equals 140 cm, and the ratio between its dimensions is $3 : 4$, **calculate** its area.

First

Calculate a quantity if you have been given another quantity and the ratio between them

1 Choose the correct answer:

- a If the ratio between the girls and the boys in a school = $\frac{1}{2}$, then the ratio between the boys and the girls in the same school is
(1 : 2 or 1 : 1 or 2 : 1 or 2 : 2)
- b If the ratio between two numbers is 2 : 3 and the small number is 20, then the large number is
(40 or 50 or 30 or 60)
- c If the ratio between the weight of Omar to the weight of Hossam is 6 : 5 and the weight of Omar is 72 kg, then the weight of Hossam = kg.
(30 or 40 or 60 or 50)
- d The ratio between the heights of two buildings is 3 : 4, if the height of the second one is 120 metres, then the height of the first = metres.
(30 or 60 or 40 or 90)
- e If the ratio between the number of boys to the number of girls in a school is $\frac{2}{3}$ and the total number of boys is 600, then the number of girls =
(600 or 500 or 800 or 900)

2 Complete the following:

- a If $a : b = 2 : 3$, then $b : a = \dots : \dots$ (2 : 3 or 3 : 2 or 2 : 2 or 3 : 3)
- b If $x : y = 5 : 9$ and $x = 50$, then $y = \dots$ (50 or 80 or 90 or 140)
- c If the ratio between two numbers is 5 : 6 and the smaller number is 155, then the greater number is (168 or 166 or 176 or 186)
- d If the ratio between the number of boys to the number of girls in a school is 3 : 4 and the number of boys is 60, then the number of girls is (60 or 70 or 80 or 90)
- e If $a : b = 5 : 6$ and $b = 540$, then $a = \dots$ (540 or 450 or 405 or 504)
- f If $a = 27$ and $\frac{a}{b} = \frac{3}{7}$, then $b = \dots$ (63 or 36 or 49 or 630)

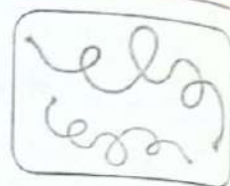
Life Problems

- 3 A football playground in the shape of a rectangle, the ratio between its two dimensions is 3 : 8. If the first dimension is 75 metres, **find** the second dimension, and the area of the playground.

- 4 The ratio between Ahmed's score to Ali's score is 2 : 3. If Ali's score is 12 points, find the scores of Ahmed.



- 5 A piece of string was divided into two parts in the ratio 7 : 5. If the length of the shorter part is 40 cm, **find** the length of the string.



- 6 The ratio between the height of a building to that of a tree is $\frac{8}{3}$. If the height of the tree is 9 m, **find** the height of the building, then **calculate** the difference between their heights.



- 7 If the ratio between the price of a pen to the price of a pencil is 3 : 2, and the price of one pencil is 80 P.T., **find** the price of 5 pens.



- 8 A fruit seller sells one kilogram of apple for L.E. 8, if the ratio between the price of one kg of apple to the price of one kg of banana is 4 : 3, **find** the price of 2 kilograms of banana.



Second Divide a given quantity into two quantities by a given ratio

- 9 **Choose the correct answer:**

- a If the ratio between two quantities is $\frac{a}{b}$ and the real sum of them is equal to M, then the real value of a =

$$\left(\frac{M}{a+b} \text{ or } \frac{M}{a+b} \times a \text{ or } \frac{a+b}{M} \times a \text{ or } \frac{a+b}{M} \times b \right)$$

- b** If the sum of two numbers equals 40 and the ratio between them is 1 : 3, then the largest number is (10 or 30 or 40 or 20)
- c** If the ratio between the number of boys to the number of girls in a school is $\frac{2}{3}$ and the total number of the pupils in this school is 600, then the number of girls = (240 or 120 or 360 or 600)
- d** If the sum of two numbers equals 105 and the ratio between them is 2 : 3, then the largest number is (84 or 63 or 42 or 21)
- e** If the number of girls in a school = $\frac{1}{2}$ the number of all the students, then the ratio between the number of girls to the number of boys in that school = (1 : 3 or 2 : 1 or 1 : 1 or 3 : 1)
- f** The number of pupils in a primary school is 360 pupils if the ratio between the number of boys and the number of girls is 1 : 2, then the number of boys = pupils. (240 or 160 or 120 or 100) (Cairo 2020)

10 Complete the following:

- a** If the ratio between two quantities is $\frac{x}{y}$, then the sum of the two terms of the ratio is
- b** If the difference between two numbers equals 20 and the ratio between them is 1 : 3, then the smallest number is
- c** If $a : b = 7 : 4$ and $a - b = 15$, then $b =$
- d** If $a : b = 5 : 6$ and $a + b = 33$, then $a =$
- e** If the ratio between the age of Hoda to the age of Mona is 2 : 5 and the difference between their ages is 9 years, then the age of Mona is years.
- f** If the perimeter of a rectangle is 40 cm and the ratio between its length to width is 3 : 2, then its area = cm^2 .

Life Problems

- 11** Youssef's father distributed L.E. 320 between Youssef and his sister Maryam in the ratio 3 : 5.

Calculate the share of each one.



12 If the ratio between two numbers is $7 : 2$ and their sum is 27, **find** the difference between the two numbers.

13 If the ratio between two numbers is $\frac{7}{5}$ and the difference between them is 20, **find** their sum.

14 If the ratio between the number of goals of El-Ahly football team to the number of goals of El-Zamalek football team is $5 : 3$ and the sum of goals of the two teams is 56 goals, **find** the number of goals of each team.



15 Two persons started a food business. If the ratio between what the first paid to what the second paid was $4 : 5$ and the money paid by the second was L.E. 12500 more than what the first paid, **find** the capital of the business.



16 In a mixed primary school, if the ratio between the number of boys to that of girls is $5 : 3$ and the number of boys is 80 more than that of girls, **find** the number of boys and the number of girls in this school.



17 Two pieces of electric wires, the ratio between their lengths is $5 : 9$. If the sum of their lengths is 126 metres, **calculate** the length of each piece. (Cairo 2018)



18 The number of pupils in a primary school is 600 pupils, if the ratio between the number of boys and the number of girls is $\frac{2}{3}$. **Find** the number of boys and the number of girls. (Ismailia 2019)

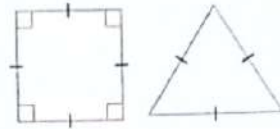


- 13 If the ratio between the length to the width of a rectangle is $8 : 5$ and the length exceeds the width by 7.5 cm, then **find** the perimeter of the rectangle.

- 14 If the ratio between the perimeter of a rectangle to that of a square is $3 : 2$, and the perimeter of the rectangle is 60 cm, **find** the area of the square.



- 15 If the ratio between the perimeter of a square to that of an equilateral triangle is $2 : 5$ and the perimeter of the square is 36 cm, then **find** the side length of the triangle.



- 16 If the ratio between the length to the width of a rectangle is $9 : 5$ and the perimeter of the rectangle is 56 metres, **find** the length and the width of the rectangle, then **calculate** its area.

- 17 If the ratio between two acute angles in a right-angled triangle equals $2 : 1$, **find** the measure of each angle.

- 18 A rectangular piece of land, the ratio between its length to its width is $9 : 7$. If the difference between its length and its width is 18 m, **calculate** each of the length, the width and the perimeter of the land.

- 19 Two pieces of cloth, the ratio between their lengths is $5 : 9$. If twice the sum of their lengths is 252 metres, **find** the length of each part.



Cumulative Exercise

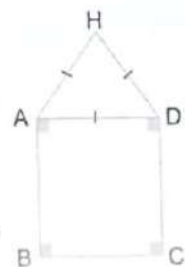
- 20 The ratio between the measures of two consecutive angles in a parallelogram is $4 : 5$, **find** the measure of each of them. (Cairo 2018)

Think and Explore

- 21 In the opposite figure:

HAD is an equilateral triangle whose perimeter is 18 cm.

- 22 If $AD : AB = 2 : 3$, **calculate** the area of the rectangle ABCD.





- 1 If the ratio between the measures of the angles of a triangle is $5 : 6 : 7$ and the measure of the first angle is 50° , **find** the measure of each of the other two angles.

- 2 A fruit seller has three kinds of fruit (banana, grapes and guava). If the ratio between the weight of banana to the weight of grapes is $2 : 3$ and the ratio between the weight of grapes to that of guava is $2 : 4$, **Find** the ratio among the weights of banana, grapes and guava.

- 3 If the ratio between the heights of three buildings is $3 : 4 : 5$ and if the height of the first building is 12 meters, **calculate** the heights of the second building and the third one.

- 4 If the ratio between the ages of Hoda, Mona and Ola is $2 : 4 : 5$ and if the difference between the age of Hoda and that of Mona is 8 years. **Calculate** the age of each of Hoda, Mona and Ola.

- 5 The ratio between the length and the width of a rectangle is $9 : 5$. If the perimeter of the rectangle is 56 metres, find out the length and the width of the rectangle, then **calculate** its area.

- 6 A triangular piece of land the ratio between the lengths of its side is $4 : 6 : 7$. If the perimeter of this piece of land equals 51 meters, **find** the lengths of the sides of the piece land.

First Ratio among three numbers

1 Choose the correct answer:

- (a) The ratio among three numbers must have the same
(ratio **or** quantity **or** units **or** number)
- (b) If one term of the ratio has a decimal point to simplify it, we can
that ratio by 10, 100, 1000, ect. (add **or** subtract **or** multiply **or** divide)
- (c) The ratio between $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ in the simplest form is : :
(3 : 4 : 6 **or** 6 : 4 : 3 **or** 4 : 3 : 6 **or** 2 : 3 : 4)
- (d) The ratio between $\frac{1}{5} : 0.5 : 0.75$ in the simplest form is : :
(5 : 2 : 4 **or** 4 : 10 : 15 **or** 10 : 4 : 5 **or** 5 : 4 : 10)

2 Complete the following:

- (a) The L.C.M of the three terms for the ratio $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ is
- (b) The ratio between 0.5 : 2 : 5 is (in its simplest form)
- (c) The ratio between 1.5 : 1.2 : 3.6 is (in its simplest form)
- (d) $\frac{1}{2} : \frac{1}{3} : 1 = 3 : 2 : \dots$

3 Find the ratio of the following in the simplest form:

- | | | |
|---|--|---------------------------------------|
| (a) 30 : 50 : 70 | (b) 1.5 : 0.45 : 0.3 | (c) $0.4 : 2 : \frac{1}{2}$ |
| (d) $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$ | (e) 120 : 64 : 16 | (f) $1\frac{1}{2} : 3 : \frac{3}{5}$ |
| (g) $\frac{1}{5} : 0.5 : 0.75$ | (h) $\frac{2}{3} : \frac{4}{6} : \frac{8}{12}$ | (i) $\frac{1}{8} : 1.5 : \frac{4}{5}$ |

4 Find the ratio of the following in the simplest form:

- (a) 1 500 gm, 2 kg and 1 200 gm (b) $\frac{2}{3}$ day, 12 hours and 240 minutes
- (c) 4.5 km, 9 000 metres and 300 000 cm (d) 150 P.T., 750 P.T. and L.E. 3
- (e) 5 m², 250 000 cm² and 3 000 dm² (f) 3 feddans, 12 kirats and $1\frac{1}{2}$ feddans

Second Combining ratios

5 Choose the correct answer:

- (Cairo 2019)
- (a) If $a : b = 2 : 3$, $b : c = 3 : 5$, then $a : c = \dots : \dots$
(8 : 15 or 2 : 5 or 4 : 9 or 3 : 10)
- (b) If $a : b = 5 : 6$, $b : c = 3 : 4$, then $a : c = \dots : \dots$
(5 : 4 or 5 : 3 or 5 : 8 or 3 : 5)
- (c) If $a : b = 2 : 3$, $b : c = 12 : 7$, then $a : c = \dots : \dots$
(2 : 7 or 3 : 7 or 8 : 7 or 3 : 12)
- (d) If $a : b = 2 : 3$, $c : b = 5 : 2$, then $a : c = \dots : \dots$
(2 : 5 or 4 : 15 or 15 : 4 or 5 : 3)
- (e) If $a : b = 3 : 5$, $b : c = 2 : 5$, then $a : b : c = \dots : \dots : \dots$
(3 : 2 : 5 or 6 : 10 : 25 or 6 : 2 : 5 or 5 : 10 : 6)
- (f) If $a : b = 3 : 2$, $c : b = 3 : 4$, then $a : c = \dots : \dots$
(2 : 1 or 1 : 2 or 4 : 1 or 1 : 4)
- (g) If $a : b = 2 : 3$, $b : c = 6 : 7$, then $a : c = \dots : \dots$
(2 : 7 or 4 : 5 or 4 : 7 or 5 : 3) (Gharbia 2018)
- (h) If $a : b = 1 : 2$, $b : c = 2 : 3$, then $a : c = \dots : \dots$
(1 : 2 or 2 : 3 or 3 : 1 or 1 : 3)

6 Complete the following:

- (a) If $a : b = 2 : 3$, $b : c = 3 : 5$, then $a : c = \dots : \dots$ (Qena 2019)
- (b) If $a : b = 2 : 3$, $b : c = 6 : 7$, then $a : c = \dots : \dots$
- (c) If $a : b = 4 : 3$, $b : c = 2 : 3$, then $a : c = \dots : \dots$ (Cairo 2019)
- (d) If $a : b = 3 : 4$, $b : c = 8 : 5$, then $a : b : c = \dots : \dots : \dots$
- (e) If $a = \frac{1}{3}c$ and b is twice a then $a : b : c = \dots : \dots : \dots$
- (f) $a = \frac{4}{5}b$, $b = \frac{2}{5}c$, then $a : c = \dots : \dots$
- (g) $\frac{1}{4} : \frac{1}{3} : \frac{1}{2} = \dots : \dots : 6$ (Cairo 2020)





7 If $A = \frac{3}{4}B$ and $C = A + B$, find $A : B : C$.

8 If $A = \frac{5}{8}C$ and $B = C - A$, find $B : C : A$.





9 If $a : b : c = 4 : 5 : 11$ and $b - a = 7$, find the value of c .

Third Applications on the ratio among three numbers


Choose the correct answer:


-  a The sum of the interior angles of any triangle is
(90° or 180° or 360° or 270°)
-  b If the ratio between the measures of the angles of a triangle is 1 : 2 : 3,
then the measure of the smallest angle equals° (Port Said 2019)
(10 or 20 or 30 or 60)
-  c If the ratio between the lengths of the sides of a triangle is 2 : 3 : 4
and its perimeter is 54 cm, then the smallest side of
the triangle = cm (40 or 60 or 12 or 9)
-  d If the height of Sahar : the height of Noha = 2 : 3 and the height of
Noha : the height of Ola = 6 : 7, then the height of Sahar : the height
of Ola = : (7 : 8 or 4 : 6 or 6 : 7 or 4 : 7)

Complete the following:

-  a The perimeter of a triangle is equal to the of its sides length.
-  b If the ratio among the three sides of a triangle is 1 : 2 : 3 and its
perimeter is 60 cm, then the smallest side is
-  c If the ratio between the weight of Rawan and Khaled is 2 : 5 and the
sum of the weights of Rawan and Khaled is 140, then the weight of
Rawan is kg.
-  d A man distributed 180 pounds among his three sons by the ratio of
1 : 2 : 3, then the share of the third son is pounds.

Life Problems

-  12 If the ratio among the ages of Amira, Razan and Rawan is 5 : 4 : 2
and the difference between the ages of Amira and Razan is 7 years.

 Calculate the age of each of Amira, Razan and Rawan.

- 13 If the ratio among the prices of the three electric sets (TV, oven, refrigerator) is 4 : 5 : 8 and the price of the TV set is L.E. 1 200, **calculate** the price of each of the oven and the refrigerator.



- 14 If the height of Hassan is $\frac{3}{4}$ the height of Ahmed and the height of Ahmed is $\frac{4}{5}$ the height of Ali and the sum of the heights of Hassan and Ahmed is 210 cm, then **find** the heights of each one of them.

- 15 Three persons formed a company. At the end of the year the profit was divided among them, where the share of the first = $\frac{5}{3}$ the share of the second and the share of the second = $\frac{4}{3}$ the share of the third. If the share of the first is more than the share of the third by 8 250 pounds, **what** is the share of each of them?

(Qalubia 2018)

- 16 Three persons started a business, the first paid $\frac{2}{3}$ of what the second paid and the third paid twice what the first paid. At the end of the year the net profit was L.E. 3 600.



- Calculate** the share of each one of them in the profit.

- 17 A load of apple fruit weighing 240 kg is distributed among three merchants. The share of the first = $\frac{2}{3}$ the share of the second and the share of the second = $\frac{3}{5}$ the share of the third. **Calculate** the share of each of them in this load.



- E** A father distributed L.E. 6 300 among his three sons. If the share of the first was third of the money and the ratio between the share of the second to that of the third equals 3 : 2. **Calculate** the share of each of them.

- E** If the ratio between the heights of Mohamed and Ahmed is 3 : 2 and the ratio between that of Ahmed and Hany is 5 : 4, **find** the ratio between the heights of Mohamed and Hany.



- E** If the ratio between the ages of Basma, Hanaa and Shereen is 2 : 3 : 5 and the difference between the ages of Hanaa and Shereen is 4 years, **find** the age of each one of them.



Cumulative Exercises

- E** In the triangle ABC, $AB : BC : AC = 7 : 5 : 3$ and $AB + BC = 30$ cm, **find** the perimeter of the triangle ABC.
- E** In the triangle ABC, $AB : BC : AC = 6 : 5 : 3$ and BC exceeds AC by 8 cm, **find** the perimeter of the triangle ABC.

Think and Explore

- E** A wire of length of 100 cm was divided into three parts by the ratio of 9 : 11 : 5, the first part is used to make a square, the second part is used to make a circle and the last one is used to make a square. **Find:** $\left(\pi \approx \frac{22}{7}\right)$
- The radius of the circle.
 - The sum of the two areas of the two squares.



- 1 Hassan spends L.E. 45 within three days, **what is the rate of what Hassan spends per day?**

- 2 A car consumes 20 litres of petrol to cover a distance 250 km. **Calculate** the rate of consumption of the car to petrol.

- 3 A plough for agricultural land, ploughs 6 feddans within 3 hours. **Find** the rate of work of this plough. If another plough ploughs 10 feddans within 4 hours. Which of them is better than the other?

- 4 A computer colour printer prints 12 paper each 4 minutes. **Find** the rate of work of this printer.

- 5 If Hazem studies 21 hours weekly, then **find** the rate of his studying daily.

- 6 A factory produces 6000 pieces of the soap in $2\frac{1}{2}$ hours, another factory produces 4500 pieces of the soap in $1\frac{1}{3}$ hours. **Which factory has more production rate?**

Ratio Applications (Rates)

1 Choose the correct answer:

- a An irrigation machine irrigates 15 feddans in 5 hours, then the rate of work for this machine is feddans/hour. (3 or 5 or 10 or 15)
- b An agricultural tractor ploughs 14 feddans in 3.5 hours, then the rate of performance of the tractor in feddan per hour is feddans/hour. ($\frac{1}{2}$ or 4 or 8 or 49) (Cairo 2019)
- c If Hazem drinks 21 glasses of milk weekly, then the rate of what he drinks daily is glasses/day. (20 or 7 or 14 or 3)
- d A runner covers 12 kilometres in $2\frac{2}{3}$ hours, then the rate of the covered distance = km/hr. (6 or 4 or 4.5 or 5.4)
- e A factory needs 320 litres of milk to produce 160 kg of butter, then the rate of the milk needed = L/kg. (1.5 or 2.5 or 2 or 3)
- f If a family drinks 56 glasses of milk weekly, then the rate of the milk used per day = glasses/day. (6 or 8 or 9 or 10)
- g A car consumes 24 litres of petrol to cover a distance of 240 km, then the rate of consumption of this car is L/km. (20 or 10 or 5 or 0.1)
- h A car covered 270 kilometres in 3 hours, then the rate of the distance covered per hour (speed) is km/hr. (60 or 80 or 90 or 100)
- i If Mostafa can translate 40 words in 8 minutes, then the rate of translation is
(5 minutes/word or 6 words/minute or 5 words/minute or 8 words/minute)
- j A machine produces 81 metres of cloth in 3 hours. Then its rate of production =
(27 metres/hour or 9 metres/hour or 72 metres/hour or 3 metres/hour)
- k A car consumes 20 litres of fuel to cover a distance of 250 km, then the rate of fuel consumption of the car is liter/km.
(0.8 or 0.08 or 8 or 0.1) (Cairo 2020)
- l Hossam covers 420 metres within 20 minutes in his sports round.
Then the rate of what Hossam covers per minute =
(21 minutes/metre or 12 metres/minute or 21 metres/minute or 12 minutes/metre)

2 Complete the following:

- (a) A family spends L.E. 480 in 6 days, the rate of what the family spends daily = L.E. per day.
- (b) A worker paints a wall of area 100 m^2 in 8 hours, then his rate of work = m^2/hr .
- (c) A car covers 120 km within 2.5 hours, then the rate of distance per hour is km/hr. (Cairo 2020)
- (d) If a runner covers 800 m in 4 minutes, then the rate of the distance that he covers in one minute is m/min.
- (e) A machine produces 24 metres of cloth in one hour and half, then the rate of production of this machine = m/hr (Alex. 2019)
- (f) A water tap leaks 6 litres of water in one hour, then the rate of leakage per minute = litres/minute.
- (g) Ali's mother uses 6.4 kg of sugar to make 8 litres of orange juice, then the rate of the sugar used is
- (h) If 24 machines irrigate 256 feddans, then the rate of what each machine irrigates is

Life Problems

3 Who runs rapidly?

A runner who covers 90 metres in 9 seconds

Or another runner who covers 80 metres in 8.5 seconds.



4 Who is the worker that has a better performance?

The first worker who paints a wall of area 120 m^2 in 10 hours.

Or the second worker who paints a wall of area 100 m^2 in 7.5 hours. (Given that the two workers paint with the same quality).



- 5 A car covers 360 km in 4 hours. **Calculate** its speed.



- 6 A car consumes 15 litres of petrol to cover a distance of 375 km and another car consumes 17 litres of the same petrol to cover a distance of 340 km. **Which car consumes less petrol? Why?**



(Qena 2013)



- 7 A printer prints 200 sheets of paper each 5 minutes. **Find** the rate of work of this printer. (Giza 2012)



- 8 A machine produces 500 m of cloth in 2 hours and another machine produces 600 m of the same cloth in 2 hours and half. **Which machine is better? Give a reason.**



- 9 A water tap leaks 20 liters of water in 4 hours. **Find** the rate of leaking per hour.



- 10 An agricultural tractor ploughs 15 feddans in 3 hours, if another tractor ploughs 21 feddans in 4 hours, then **which one of them is more efficient?** (Cairo 2019)



- 11 A water tap leaks 24 litres of water in 6 hours.

Find the leaking rate of water per hour. (Gharbia 2018)



Cumulative Exercise

- 12 You went to a grocery shop and you had L.E. 105. You asked the grocer about the price of one kg of rice, he replied saying L.E. 10. Then you bought 3.5 kg of rice for the family's need during a week.

Calculate each of the following:

- a) The ratio between what you paid as a price of rice to what remained with you.

- b) The rate of your family's consumption of rice per one day.

Think and Explore

- 13 A tap can fill a sink in 12 hours, another tap can fill the same sink in 3 hours and a third tap can fill the same sink in 4 hours, if we turn on the three taps together how long will the sink take to be filled (in minutes)?

- 1** Write the ratio between the two numbers in each of the following cases in the simplest form:
 - a 16 and 64
 - b 15 and 105
 - c 16 and 128

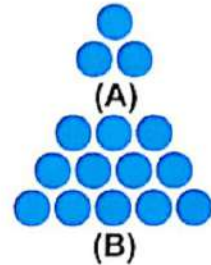
- 2** Write in the simplest form each of the following ratios:
 - a $2.7 : 18.9$
 - b $5\frac{9}{4} : 14.5$

- 3** Express in two different ways the ratio between each two numbers:
 - a 14 , 128
 - b 2.4 , 18
 - c 185 , 370

- 4** Write in the simplest form each of the following cases:
 - a half km : 250 metres
 - b 125 piasters : 5 pounds
 - c 150 grams : a quarter of a kilogram
 - d 2.25 feddans : 16 kirats

5 Calculate using the opposite two figures:

- (a) The ratio between the number of circles in figure (A) to the number of circles in figure (B).
- (b) The ratio between the number of circles in figure (B) to the number of all circles in the two figures (A) and (B).



6 An accountant in a bank earns L.E. 2000 as a monthly salary. He spends $\frac{3}{4}$ of his salary and saves the remainder, find:

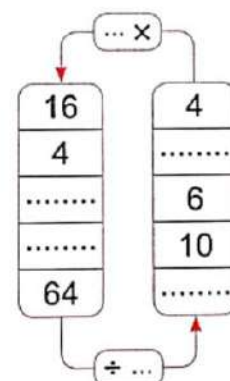
- (a) The ratio between what the accountant spends to his monthly salary.
- (b) The ratio between what he saves to his salary.
- (c) The ratio between what he spends to what he saves.

7 A factory produces 5000 juice cans 8 hours, find the production rate per hour.

8 A water tap is leaking 20 litres of water in 5 hours. Find the leaking rate of water per hour. Please advise them.

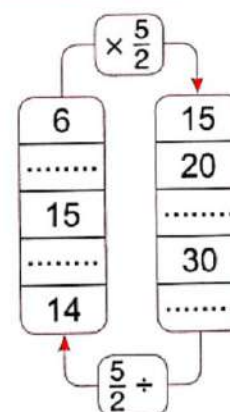
- ① **Complete** the opposite diagram for the corresponding numbers in the two columns of the table are proportional, then complete the form of proportion below:

$$\frac{4}{16} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots}$$



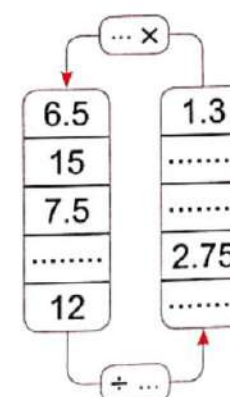
- ② **Complete** the opposite diagram for the corresponding numbers in the two columns of the table are proportional, then complete the form of proportion below and write some forms of proportion:

$$\frac{6}{15} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots}$$



- ③ **Complete** the opposite diagram for the corresponding numbers in the two columns are proportional, then write some forms of proportion:

$$\frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots} = \frac{\dots}{\dots}$$



The meaning of proportion:

1 Choose the correct answer:

- (a) The value of a that makes the two fractions $\frac{4}{9}$ and $\frac{16}{a}$ in proportion is
(81 or 27 or 36 or 18)
- (b) The value of x that makes the two fractions $\frac{x}{36}$ and $\frac{8}{9}$ in proportion is
(16 or 40 or 32 or 24)
- (c) The value of b that makes the two fractions $\frac{9}{7}$ and $\frac{b}{1.4}$ in proportion is
(16.2 or 12.6 or 1.8 or 1.28)
- (d) The value of y that makes the two fractions $\frac{6.5}{y}$ and $\frac{1.5}{0.3}$ in proportion is
(1.95 or 5 or 1.3 or 0.3)

2 Complete the following:

- (a) The proportion is
- (b) $\frac{3}{5} = \frac{18}{\dots\dots}$
- (c) $\frac{9}{7} = \frac{18}{\dots\dots} = \frac{\dots\dots}{28}$
- (d) $\frac{2}{5} = \frac{20}{\dots\dots} = \frac{\dots\dots}{60}$

3 Complete the following tables to make the corresponding numbers in the two rows in proportion:

(a) $\times 2$

4	.....	.....	10	.....	40
8	12	28	.....	90	.....

$\div 2$

(b) $\times \dots$

3	5	.....	7	.....
18	.....	36	.....	60

$\div \dots$

(c) $\times \frac{3}{2}$

.....	.....	8	.....	12	.....	18
3	9	.....	15	.....	24	.....

$\div \dots$

d

5	.....	30	.....	75	.....	150
.....	12	6	70	.....	100	.....

e

3	9	.....	.....	18	.....
.....	.....	4	5	.....	7

4 Complete the following diagrams, then complete the proportion below:

a

.....	5
42	.....
30	.....
.....	11
10.5	.....

$3 \times$

$\div 3$

$\frac{5}{.....} = \frac{.....}{42} = \frac{.....}{30} = \frac{11}{.....} = \frac{.....}{10.5}$

b

8	2
4	.....
.....	6
.....	10
64	.....

$... \times$

$\div ...$

$\frac{4}{16} = \frac{.....}{.....} = \frac{.....}{.....} = \frac{.....}{.....} = \frac{.....}{.....}$

Cumulative Exercise

5 Complete the following table which shows the relation between the time in hours and the distance which a car covered in kilometres:



Time	4	.....	9	5	10	.....	7
Distance	.....	240	720	.....	.....	760	.....

Remember that: $\frac{720}{9} = 80$ km/hour (is called the speed of this car)

Think and Explore

6 If the numbers in the two rows of the following table are in proportion, complete the missing numbers:

240	160	.....
90	.....	120

1 Find x in each of the following proportion:

(a) $\frac{5}{8} = \frac{15}{x}$

(b) $\frac{x}{6} = \frac{20}{30}$

2 Find the missed number (x) for the following numbers to be proportional 6, 8, 3 and x .

3 Ali bought 5 kg of orange, he paid L.E. 15. **How much** money does he pay to buy 8 kg?

4 A car consumes 20 litres of benzin for covering 210 km, **how many** litres of benzin does the car consume to cover 630 km?



5 The ratio between Hany's weight to the weight of his father = 3 : 5, **what** is Hany's weight if the weight of his father is 90 kg?

6 A primary school, its building height is 14 metres and the shade of this building at a certain moment is 5 m length.

What is the height of a tree in the same moment if its shade length is 3 metres?



First Properties of proportion

1 Choose the correct answer:

a If $\frac{x}{1} = \frac{y}{m}$, then $y \times 1 = \dots\dots\dots$

($\frac{y}{1}$ or $1 \times m$ or $\frac{x}{m}$ or $x \times m$)
($\frac{3}{b}$ or $\frac{a}{3}$ or $\frac{b}{3}$ or $\frac{b}{a}$)

(6 or 8 or 10 or 12)

(6 or 21 or 12 or 7)

(0.2 or 0.7 or 20 or 12)

(4 or 16 or 9 or 14)

(13 or 11 or 12 or 6)

(2 or 4 or 6 or 12)

(6 or 9 or 12 or 3)

g If $\frac{x}{18} = \frac{4}{6}$, then $x + 1 = \dots\dots\dots$

h If $\frac{x+2}{3} = 2$, then $x = \dots\dots\dots$

i If $\frac{x}{21} = \frac{4}{7}$, then $x = \dots\dots\dots$

j If the ratio 7 : 13 is the same ratio as $x : 52$, then $x = \dots\dots\dots$

(14 or 21 or 28 or 35)

k If the number 4, a, 20 and 30 are in proportion, then $a = \dots\dots\dots$

(6 or 5 or 10 or 15)

2 Complete the following:

a If $\frac{a}{b} = \frac{c}{d}$, then $a \times d = \dots\dots\dots$

b If $\frac{3}{7} = \frac{x}{21}$, then $3 \times 21 = \dots\dots\dots \times \dots\dots\dots$

c If $\frac{2}{11} = \frac{4}{x}$, then $x = \dots\dots\dots$

d If $\frac{3}{5} = \frac{6}{x}$, then $x + 3 = \dots\dots\dots$

e If $\frac{x+2}{6} = \frac{1}{2}$, then $x = \dots\dots\dots$

f If $\frac{x+5}{3} = 7$, then $x = \dots\dots\dots$

g If the numbers 4, x, 12 and 18 are proportional, then the value of $x = \dots\dots\dots$

h If the numbers 2, 6, y and 27 are proportional, then the value of $y = \dots\dots\dots$

3 Find the missing number in each proportion of the following:

a $\frac{8}{4} = \frac{6}{\dots}$

b $\frac{20}{\dots} = \frac{7}{21}$

c $\frac{0.8}{1.6} = \frac{1.6}{\dots}$

d $\frac{10.5}{\dots} = \frac{9}{18} = \frac{\dots}{2.4} = \frac{12\frac{1}{2}}{\dots}$

e $\frac{12}{48} = \frac{13}{\dots} = \frac{\dots}{68} = \frac{19}{\dots} = \frac{\dots}{80}$

f $\frac{10}{5} = \frac{\dots}{3.5}$

g $\frac{1.5}{\dots} = \frac{2.25}{0.6}$

h $\frac{48}{64} = \frac{7.5}{\dots}$

4 Find the value of x in the following proportion:

a $\frac{5}{8} = \frac{15}{x}$

b $\frac{1}{2} = \frac{10}{x}$

c $\frac{2}{3} = \frac{x}{9}$ (Beni Suef 2019)

d $\frac{x}{6} = \frac{36}{54}$

e $\frac{5}{6} = \frac{x}{6}$

f $\frac{4}{10} = \frac{x}{2.25}$

g $\frac{x}{4} = 3$

h $\frac{8}{x} = 0.5$ (Kafr El-Sheikh 2018)

5 Find the missing term in each of the following for the numbers to be proportional:

a $\dots, 6, 10$ and 12

b $4, \dots, 16$ and 64

c $18, \dots, 5$ and 10

d $0.8, 4.8, \dots$ and 12

e $8, 10, 12$ and \dots

f $6, \dots, 10$ and 42

6 Find the value of x in each of the following for the numbers to be proportional:

a $9, 21, 3$ and x

b $5, 25, x$ and 10

c $3, 8, 9$ and x

d $x, 5\frac{1}{2}, 8$ and 16

e $3.6, x, 11$ and 33

f $a, 3a, 5$ and x (Dakahlia 2018)

7 Choose the correct answer:

(a) If $\frac{x+8}{6} = 2$, then $x =$ (4 or 2 or 6 or 12)

(b) If $\frac{x-3}{21} = \frac{2}{7}$, then $x =$ (6 or 9 or 12 or 3)

(c) If $a : b = 3 : 4$, then $\frac{b}{a} =$ (3 : 5 or 3 : 4 or 3 : 7 or 4 : 3)

(d) The first proportion of the numbers 5, 10 and 20 is (10 or 2.5 or 40 or 50)

(e) If two ratios are equal, then the product of the extremes the product of the means. ($>$ or $<$ or $=$ or \neq) (Dakahlia 2011)

(f) A car consumes 15 litres of fuel every 180 hours. Then the number of litres of the fuel which the car consumes in 144 hours = litres. (10 or 16 or 18 or 12)

(g) If 100 gm of food gives 400 calories, then the number of calories which 20 gm of the same food gives equals calories. (80 or 100 or 8 or 100)

8 Complete the following:

(a) If $\frac{x+2}{6} = \frac{1}{2}$, then $x =$

(b) If $\frac{x+5}{3} = 7$, then $x =$

(c) If 3, $x - 1$, 4 and 8 are in proportion, then $x =$

9 Find the value of x in each of the following:

(a) $\frac{x+12}{8} = 2$

(b) $\frac{x+4}{9} = \frac{8}{12}$

(c) $\frac{x-8}{10} = \frac{4}{8}$

(d) $\frac{4}{x-4} = \frac{30}{45}$

(e) $\frac{x-7}{8} = 3$

(f) $\frac{2x+18}{2} = 21$

Life Problems

- 10 Hend bought 8 bottles of juice for 12 pounds each.
How much money did Hend pay to buy 15 bottles?



- 11 The price of 15 litres of liquid soap is L.E. 7.5, **find**:

- a) The price of 45 liters of this soap.
b) The number of liters of price L.E. 60.



- 12 A car consumes 20 litres of petrol to cover a distance of 240 km. **Calculate** the rate of petrol consumption of the car and calculate the quantity of petrol which the car needs to cover a distance of 600 km.



- 13 The height of a minaret is 22 metres, and the length of its shadow at a certain moment is 6 metres. **How high is a house next to this minaret if the length of its shadow is 3 metres at the same moment?**



- 14 A plane needs 50 litres of fuel to cover a distance of 2 000 km. **How many litres of fuel does the plane need to cover a distance of 25 000 km?**



15 A tractor ploughs 14 feddans in 3.5 hours.

a Calculate the work rate of this tractor.

b Calculate the number of feddans which the tractor can plough in 5 hours.



16 If the price of a juice can in a market is 3 pounds, find:

a The number of juice cans that can be bought for 27 pounds.

b The price of 32 cans of the same kind of juice.



Cumulative Exercise

17 In the following table, calculate the values of x and y that make the corresponding numbers in the two rows proportional.

$x + 2$	15	10
3	9	$y - 2$

Think and Explore

18 If $\frac{a+4}{3} = \frac{2(b+4)}{6}$, complete:

1 $\frac{a}{b} = \dots\dots\dots$

2 $\frac{b}{a} = \dots\dots\dots$

- ① A picture of a building is taken with a drawing scale of 1 : 1000.

If the height of the building in the picture is 3 cm, **what** is its real height?

- ② Ahmed draw a picture to his brother Osama with a drawing scale 1 : 40.

If the real height of Osama is 160 cm, **what** is his height in the picture?

- ③ A magnified picture of an insect was taken with enlargement ratio 100 : 1

If the length of the insect on the picture is 2.5 cm, **what** is the real length of the insect?

- ④ If the distance between two cities on a map is 3 cm, and the real distance between them is 9 km.

a Find the drawing scale of the map.

b If the distance between two cities on the same map is 5 cm, **calculate** the real distance between the two cities.

5 Complete the following table:

	Description	Drawing scale	Drawing length	Real length	Enlargement minimization
a	The distance between squares on a map of a town	1 : 50000	2 cm	.....	.....
b	The length of a playground of a picture of sport playgrounds	1 : 3600	.....	12 m	.....
c	The height of a house on a picture of a quarter	.....	3 cm	18 m	.....

6 A rectangular piece of land of area 1200 m^2 is drawn in a drawing scale

1 : 200, if the length in drawing is 20 cm, find:

- a The real length of the land.
- b The real width of the land.

7 If the length of the Suez Canal on a map of a drawing scale

1 : 1100000 is 15 cm, find its real length in kilometres.

First

The meaning of the drawing scale

1 Choose the correct answer:

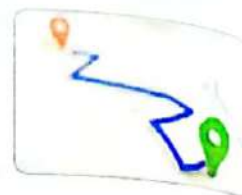
- a If the drawing scale < 1 , this means
(equality **or** minimization **or** maximization)
- b If the drawing scale > 1 , this means
(equality **or** minimization **or** maximization)
- c If the drawing length equals 2 cm and the real length equals 6 metres, then the drawing scale equals (Cairo 2018)
(1 : 10 **or** 1 : 300 **or** 1 : 1 000 **or** 1 : 10 000)
- d If the length of an object in drawing is 5 cm and its real length is 5 m, then the drawing scale = :
(1 : 30 **or** 1 : 100 **or** 1 : 3 000 **or** 1 : 30 000) (Giza 2018)
- e If the height of the fence of a villa in a design is 5 cm and its real height is 300 cm. Then the drawing scale =
(60 : 1 **or** 1 : 60 **or** 30 : 1 **or** 1 : 30) (Giza 2020)
- f If the drawing length of an insect is 4 cm and its real length is 2 mm, then the drawing scale is (1 : 20 **or** 40 : 0.2 **or** 20 : 1 **or** 4 : 20)
- g If the distance between two cities on the map is 2 cm and the real distance between them is 8 kilometres, then the drawing scale of this map is (1 : 40000 **or** 1 : 400000 **or** 1 : 800000 **or** 800000)

2 Complete each of the following:

- a The drawing scale =
- b The drawing length = \times
- c The real length =
- d If the drawing length of an object is 2 cm and its real length is 20 metres, then the drawing scale = :
- e If the height of a pupil in a picture is 12 cm and his real height is 1.2 metres, then the drawing scale = :

Life Problems

- 3 If the distance between two cities is 50 kilometres and the distance between them on a map is 5 cm.



Find the drawing scale of this map.

- 4 A magnifying glass is used to magnify an insect of real length 0.2 mm. If its length after magnification is 10 cm, calculate the ratio of magnification.



- 5 If the length of a tree in a picture is 6 cm and its real length is 9 metres, find the drawing scale of this picture.

Second Calculate the real length and the drawing length

- 6 Choose the correct answer:

- a If a building of height 30 m is drawn with a scale 1 : 10 000, then its height in the picture equals cm. (0.3 or 3 or 30 or 0.03)
- b If the drawing scale is 1 : 200 and the drawing length is 5 cm, then the real length = m. (5 or 8 or 10 or 12)
- c If the real distance between two cities is 180 km and the drawing scale of a map is 1 : 9 000 000, then the distance between them on this map = cm. (2000 000 or 9 or 2 or 0.5)
- d If the height of Khaled in a picture is 7 cm and the drawing scale of the picture is 1 : 25, then the real height of Khaled is m. (175 or 1.25 or 2 or 1.75)

7 Complete each of the following:

- (a) If the drawing scale is 1 : 300 and the drawing length is 2 cm, then the length in reality = m
- (b) A map is drawn with a scale 1 : 200 000, if the real distance between two cities is 8 km, then the length between them on the map = cm

(Beheira 2020)

8 Complete:

	The drawing distance	The real distance	The drawing scale	Magnification or reduction
(a)	..... cm	10 km	1 : 100 000	.....
(b)	12 cm	..... m	1 : 600	.....
(c)	..... cm	5 mm	70 : 1	.....
(d)	24 dm	12 km	.....	.....
(e)	20 cm	..... km	1 : 400 000	.....

Life Problems

- 9 If the distance between two cities on a map is 3 cm with a drawing scale 1 : 500 000, **find** the real distance between them in km.

- 10 Cairo Tower is considered one of the touristic places in Cairo which was established in 1956 - 1961 in the form of lotus flower, its height is 187.2 m. If its height in a picture is 30 cm:



- (a) **Find** the drawing scale.
- (b) If the height of one of the neighbouring buildings is 3.5 cm, **find** its real height.

- 11 A picture of a natural scene is drawn with a drawing scale 1 : 100. If the real length of a tree is 8 metres, **find** its length in the picture.



- 12 The opposite picture represents an image of a garden, in the form of a rectangle with dimensions 4 cm and 7 cm magnified by 3 : 2, **find** the dimensions of the image after magnification.



- 13 If the real distance between two cities is 12 km. **Find** the distance between them on the map if the drawing scale of this map is 1 : 400 000. (Cairo 2020)



- 14 If the distance between two cities on a map is 10 cm and the real distance between them is 120 km, **find** the drawing scale of the map, and if the distance between two other cities on the same map is 6 cm, **calculate** the real distance between them.



- 15 Two maps are drawn such that the scale of the first is 1 : 500 000 and the scale of the second is 1 : 1 250 000, if the distance between the two cities on the first map is 5 cm, **find** the distance between the same two cities on the second map.



- 16 A rectangular piece of land with 50 metres length and 30 metres width was drawn in a picture with length 100 cm, **find**:
- a The drawing scale. b The width in drawing.

- 17 If the distance between El-Arish City and Sheikh Zayed City on a map is 3.5 cm and the map was drawn with a drawing scale 1 : 1 000 000, **find**:
- a The real distance between the two cities.
- b The drawing scale of another map if the distance between them on this map = 14 cm.

Cumulative Exercises

- 18 A model for a football playground is drawn with a drawing scale 1 : 300. If the dimensions of the playground in the model are 20 cm and 18 cm, **find**:



- The real dimensions of the playground.
- The real area of this playground in square metres.
- The real perimeter of this playground in metres.

- 19 A rectangular picture was taken for an insect whose real dimensions are 6 mm and 9 mm. Its dimensions became 4.2 cm and x cm respectively, **find**:

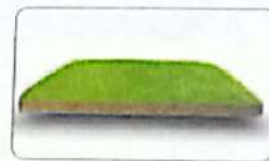


- The ratio of enlargement.
- The value of x in cm.

- 20 The side length of a square garden is 60 metres.

If it is drawn with a drawing scale 1 : 1000, then

- find** its area in the drawing.



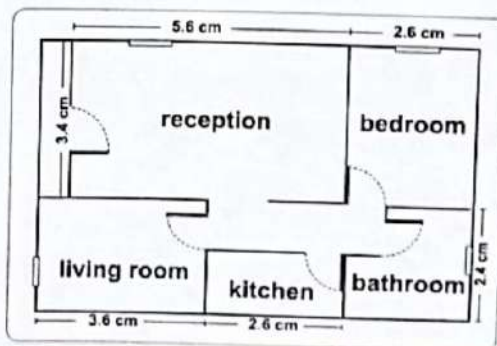
Think and Explore

21 Architecture Engineering:

The opposite figure shows the floor plan of a house with a drawing scale 1 : 150.

Find:

- The real dimensions of the reception.
- The real dimensions of the bedroom.
- The real area of the living room.
- The real area of the floor of the house.



- ① A piece of building land is distributed between two brothers in the ratio 7 : 5. If the share of the first one exceeds the share of the second by 80 square metres. **Find** the area of the land and the share of each of the first and the second.

.....

.....

- ② The number of pupils of a primary school in the 1st, the 2nd and the 3rd grades is 240 pupils. If the ratio among the three grades is 5 : 4 : 3, **calculate** the number of pupils in each grade.

.....

.....

- ③ A father distributed LE. 225 among his three sons. If the share of the first was third of the sum and the ratio between the share of the second and the share of the third was 2 : 3, **find** the share of each one of them.

.....

.....

- ④ For solving the illiteracy problem at a village, 3 classes have been opened and the number of learners was 92 persons. If the number of learners in the 1st class = $\frac{2}{3}$ the number of learners in the 2nd class and the number of learners in the 2nd class = $\frac{5}{7}$ the number of learners in the 3rd class. **Find** the number of learners in each class.

.....

.....

- ⑤ In one of our schools, there are 560 students, if the number of girls = $\frac{3}{5}$ the number of boys, **find** each of the number of boys and girls.

.....

.....

The proportional division

1 Choose the correct answer:

(a) If a father distributed 450 pounds between his two sons in ratio 2 : 3, then the share of the first son is pounds.

- | | |
|---------|-------|
| 1 1 350 | 2 270 |
| 3 180 | 4 900 |

(b) If a man distributed 6 000 pounds among his three sons in ratio 2 : 3 : 7, then the share of the third son is pounds.

- | | |
|---------|---------|
| 1 1 500 | 2 1 000 |
| 3 2 800 | 4 3 500 |



(c) A sum of money is divided between two persons in ratio 2 : 7, if the share of the second is more than the share of the first by L.E. 60, then the share of the second is L.E.

- | | |
|-------|-------|
| 1 24 | 2 84 |
| 3 420 | 4 120 |

(d) If the ratio between the measures of the angles of a triangle is 2:3:5, then the measure of the smallest angle is

- | | |
|-------|--------|
| 1 90° | 2 54° |
| 3 36° | 4 144° |

Life Problems

2 A father divided 900 pounds between his two sons in the ratio 4 : 5. Find the share of each of them.



3 Divide L.E. 450 between Hassan and his cousin Shaimaa such that the share of Hassan is $\frac{2}{3}$ Shaimaa's share.



- 4 If the ratio between the measures of the angles of a triangle is $2 : 3 : 4$, **find** the measure of each angle. (Giza 2018)

- 5 A rectangular piece of land. Its perimeter is 110 metres and the ratio between its two dimensions is $2 : 3$. **Find** its area.



- 6 A triangular garden in a school, the ratio between its side lengths is $2 : 3 : 1$. If the perimeter of the garden is 90 metres. **Calculate** the length of the longest side of the garden. (Dakahlia 2019)

- 7 A triangular garden in a school, the ratio between its side lengths is $3 : 4 : 5$. If the perimeter of the garden is 120 metres, **calculate** the lengths of the sides of the garden.



- 8 The ratio between the age of Hend, Yassien and Fayrouz is $2 : 3 : 5$. If the difference between Yassien's age and Fayrouz's age is 4 years, **find** the age of each one.



- 9 Three persons started a business. The first paid L.E. 40 000, the second paid L.E. 50 000 and the third paid L.E. 60 000. At the end of the year, the net profit was L.E. 45 000. **Calculate** the share of each of them. (Cairo 2018)

- 10 Samy, Nabil and Wael started a business, the ratio among the money they paid is $3 : 4 : 5$. At the end of the year, the net profit which was divided among them was L.E. 36 000. **Calculate** the share of each of them from the profit.

- 11 Hani, Khaled and Fady started a commercial business, Hani paid L.E. 30 000, Khaled paid L.E. 40 000 and Fady paid L.E. 50 000. At the end of the year the loss was 6000 pounds. **Find** the share of each of them in the loss.

- 12 Three persons set up a trade. The first paid L.E. 6 000, the second paid L.E. 4 800 and the third paid L.E. 7 200. At the end of the year, the profit of the first was L.E. 240 more than that of the second. **Find** the profit of each one of them.



- 13 A man died and left 24 000 pounds to be distributed among his wife, two sons and one daughter. The wife's share is $\frac{1}{8}$ of the amount and the share of the son is twice the share of the daughter. **Find** the share of each of the wife, the son and the daughter. (Gharbia 2016)

- 14 Three persons shared in a trade, the first paid L.E. 30 000, the second paid L.E. 24 000 and the third paid half the sum of what the first and the second paid. At the end of the year, the profit was L.E. 2 700. **Find** the share of each of them of the profit. (Cairo 2020)

- 15 Three people established a food business. The first paid L.E. 35 000, the second paid L.E. 25 000 and the third paid L.E. 20 000. At the end of the first year, the establishment lost L.E. 16 000, which was taken from the capital. **Calculate** the capital of each person in the beginning of the second year.



- 16 A man died and left a piece of land whose area is 17 kirats. He recommended 5 kirats of it for building an orphanage and the rest to be divided between his son and his daughter in ratio 2:1. **Calculate** the share of each of them.



Cumulative Exercises

- 17 A man owns a piece of land whose area is 48 kirats. He recommends that half of the area should be used for building a school. And the other half will be divided among his two sons and his two daughters such that the share of the boy is twice the share of the girl. **Calculate** the share of each of them.



- 18 A man died and left L.E. 72 000 to be divided among his wife, 2 boys and 3 girls. The wife should take $\frac{1}{8}$ of the capital and each boy should take twice each girl. **Calculate** the share of the wife and the share of each boy and girl.



- 19 The production of three oil wells is 17600 barrels per day. The first well produces $\frac{3}{4}$ of the amount produced by the second; the third well produces $\frac{3}{5}$ of the amount produced by the first well.



How many barrels are produced by each well?

- 20 In a train, there are 940 passengers. If the number of the passengers in the first class = $\frac{5}{6}$ the number in the third class and the number of the passengers in the second class = $\frac{7}{9}$ the number in the third class.



Find the number of the passengers in each class.

Think and Explore

- 21 Ali, Mona and Hassan started a project at the end of the year the profit was L.E 48 000. If Ali took $\frac{2}{5}$ of the profit, Mona took $\frac{1}{4}$ of the profit, and Hassan took the rest. **Find** the share of each one of them.

- 1 In a school trip, if 12 pupils from 25 pupils in a class have participated, find the percentage of the participant pupils.

- 2 Complete the following table as in the example:

	The fraction	The percentage	The symbol	Verbal expression
EX.	0.75	$\frac{75}{100}$	75%	75 percent
a	0.06	.....	.....	6 percent
b	.....	.....	40%	.....
c	$\frac{11}{25}$	.....	.....	.....

- 3 Magid bought a T-shirt, labelled on a small card on it (made of cotton and synthetic). If the percentage of the synthetic is 40% only, calculate the percentage of cotton, then find the equivalent fraction to each percentage.
- 4 If the percentage of the number of girls in a class which is mixed is 67%, find the percentage of the number of boys in this class.
- 5 In a conditioned carriage in a train, the number of occupied seats is 48 seats if the number of seats of the carriage is 60 seats. Calculate.
- The percentage of the occupied seats.
 - The percentage of the empty seats related to the number of occupied seats.

Percentage

1 Choose the correct answer:

- (a) The percentage is a ratio, its second term is (10 or 100 or 1 or 1000)
(6 or 24 or 25 or 30)
- (b) $\frac{6}{20} = \dots\%$
- (c) If 45 % of $x = 90$, then $x = \dots$ (200 or 100 or 300 or 20) (Menofia 2015)
- (d) If $\frac{18}{x} = 20\%$, then $x = \dots$ (90 or 1000 or 120 or 190) (Menofia 2020)
- (e) $12\% \div 4\% = \dots$ (3 or 0.3 or 0.003 or 3%)
- (f) 30% of a number equals
(its third or its three tenths or its two thirds or its three hundredths)
(100 or 1 or 10)
- (g) $15\% + 10\% + \frac{3}{4} = \dots\%$ (200 or 150 or 125 or 50)
- (h) 25% of 100 = 50% of (100 or 41 or 59 or 80) (Cairo 2019)
- (i) $1 - (32\% + 27\%) = \dots\%$
- (j) If 70% of a number = 294, then the number is
(205.8 or 100 or 294 or 420)
(12 or 4 or 300 or 3)
- (k) If $\frac{a}{12} = 25\%$, then $a = \dots$
- (l) If the percentage of absent students in a school is 8%, then the percentage of the attendees is% (0.92 or 92 or 9.2 or 0.092)
- (m) In a mathematics test, Rahma scored 23 marks out of 25 marks, then the percentage of the scored marks of Rahma =
(92 or 9.2 or 96 or 92%) (Damietta 2011)
- (n) If the price of a packet of soap powder rose from L.E.12 to L.E.15, then the percentage of the increase in the price equals
(15% or 20% or 25% or 30%)

2 Complete each of the following:

- (a) Percentage is a its second term is
- (b) $\frac{9}{20} = \dots\%$ (Cairo 2020)
- (c) $1\frac{3}{4} = \dots\%$ (Giza 2020)
- (d) $0.35 + \frac{9}{20} = \dots\%$ (Giza 2020)
- (e) $18\% + 52\% + \dots = 1$
- (f) $3\% + 0.30 + \frac{1}{2} = \dots\%$
- (g) $85\% + 32\% - \dots = 100\%$

- h) 25% of 1000 = (Beheira 2020) i) $12\frac{1}{2}\%$ of 480 =
 j) 25% of = 150 k) % of 5 000 = 25

3 Convert each of the following into a fraction in the simplest form:

- a) 3% = b) 45% =
 c) 32% = d) 30% =
 e) 80% = f) 43% =
 g) 75% = h) 10.5% =
 i) 25.5% = j) $33\frac{1}{3}\%$ =

4 Convert each of the following into a decimal:

- a) 5.6% = b) 45.5% =
 c) 0.02% = d) $43\frac{1}{4}\%$ =
 e) $37\frac{1}{3}\%$ =

5 Convert each of the following into a percentage:

- a) $\frac{5}{6}$ = b) $\frac{3}{4}$ =
 c) $\frac{3}{200}$ = d) $\frac{7}{25}$ =
 e) $\frac{2}{3}$ =



Remember

The percentage is a ratio, its second term is 100.

6 Convert each of the following into a percentage:

- a) 0.6 = b) 0.205 =
 c) 0.004 = d) 0.2 523 =
 e) 0.0 375 =

7 Convert the following ratios into percentages:

- a) 3.2 : 16 = b) 42 : 56 =
 c) 250 : 400 = d) $3.5 : 5\frac{1}{4}$ =

8 Find the value of x in each of the following:

a $\frac{x}{9} = 15\%$ (Cairo 2019)

b $\frac{x}{15} = 45\%$

c $\frac{2}{x+8} = 5\%$

d $\frac{x+5}{20} = 50\%$

e $\frac{x-7}{100} = 25\%$

f $\frac{3x}{2} = 75\%$

9 Find the ratio between each of the following two quantities in its simplest form, then convert it into percentage:

a 21 cm, 2 m

b 5 minutes, one and half hours

c 200 gm, 2 kg

d 15 months, one and half years

10 Find the ratio between each of the following:

a 60% of L.E.135 and 45% of L.E. 200

b 10% of 225 km and 15% of 175 km.

Life Problems

11 The number of the students in the sixth grade in a primary school is 200 students, if 180 students of them succeeded, find the percentage of the students who failed in this grade.



12 If the percentage of failing in the sixth grade in a primary school was 8 % and the number of students who succeeded was 184 students, how many students had actually failed?



- 15 The price of a kilogram of apples increased from L.E. 10 to L.E. 12.5. What is the percentage of the increase?



- 16 A factory of cars produces yearly 150 of a certain cars, the owner of the factory decided to increase the number of production of that car 45 cars in the 1st year and 39 cars in the 2nd year, calculate:

a) The percentage of the increase in the 1st year.



b) The percentage of the increase in the 2nd year.

- 17 In the mathematics exam, Mervat got 54 marks out of 60 and in the Arabic exam she got 114 marks out of 120. In which subject has Mervat got a better score?

- 18 If the percentage of the successful pupils in an Arabic exam in sixth grade in a school is 85%, calculate: the percentage of those who failed, then write each of the percentages of successful pupils and the ones who failed in the form of a common fraction in its simplest form.



- 19 Hassan ate 3 pieces of gateaux from a box containing 24 pieces in the party of his birthday. He distributed 6 pieces among his family. Calculate the percentage of the number of pieces that Hassan ate and the percentage of the number of pieces eaten by his family.



18 The monthly income of a family is L.E. 7200. If they save L.E. 900 monthly, **calculate**:

a The percentage of saving.

b The percentage of expenditure.



19 A family pays 25% of its monthly income for housing and clothing, 47% for food and saves the rest. **Find** how much this family will save monthly if its monthly income is L.E. 8400.



20 A man pays 860 pounds monthly for housing which is equal to 40% of his monthly income. **Find** the monthly income of that man.

21 A road whose length is 280 km was paved in four weeks. If 40% of it was paved in the first week, 25% of it was paved in the second week and 15% of it was paved in the third week. **How many kilometres were paved in the fourth week?**

22 An aquarium contains some fish, the colour of 25% of the fish is red, 45% of them are blue and the rest are yellow. If the number of yellow fish is 12, then how many red and blue fish does this aquarium contain?



23 A merchant bought some refrigerators, then he sold 25% of them and the remainder was 150 refrigerators. **How many refrigerators were there at first?**



Q In a company for selling electric sets, the total amount of the sold sets were 1250 sets, 450 T.V sets, 500 air conditioners and the rest were automatic washing machines.

Q Calculate the percentage of selling of each set.



Cumulative Exercises

Q The percentage of success in a school equals 85% and the total number of the students in this school is 800 students. If the ratio between the number of successful boys and the number of successful girls equals 2 : 3, find the number of successful girls in this school.



(Assuit 2013)

Q If 32% of the sum of weights of three amounts of oranges, apples and bananas is 80 kg and the ratio between them is 3 : 2 : 5, then find the weight of each amount.

Think and Explore

Q If a family pays 25% of its monthly income for housing, 35% for food, and the rest of its income is L.E 4200. How much money does this family save monthly if this family saves 10% of its monthly income?

- 1 Calculate the paid value in each of the following purchases in a company which offers discounts on its sales:

- a A shirt with price LE. 65 at 15% discount.
- b An iron with price LE. 120 at 20% discount.
- c A computer with price L.E. 2 700 at 9% discount.



- 2 Khaled bought a flat for LE. 150 000.

He sold it at 5% loss.

Calculate the selling price of the flat.



- 3 In a shop, the original price of a blouse was LE. 120 and the original price of a dress was LE. 350. Hoda bought them at 15% discount.

Calculate what Hoda paid after discount.



- 4 A merchant bought a quantity of frozen meat for LE. 200 000. After buying it, he found that a part of it was expired due to bad storing. He sold the rest for LE. 180 000.

Find the percentage of loss.



- 5 If the cost price of a set of electric appliances is LE. 72 000 and it is sold at 12% profit, **calculate** the selling price.



First The interest and the discount

1 Complete the following table:

	The original price	The percentage of the discount	Discount	The price after discount
(a)	3 000	.....	.....	2 750
(b)	.....	.....	32	192
(c)	450	.....	50	.....
(d)	560	10%	.....	.....
(e)	.....	15%	65	.....

Life Problems

2 Fayrouz deposited L.E. 9 000 in a bank with an annual interest 11%.
Calculate the total amount which she will get at the end of one year. (Giza 2019)

3 Yassein deposited L.E. 2 000 in a bank with an annual benefit 10.5%.
Calculate the total amount which he will get at the end of the year.

4 The price of a mobile phone before discount was L.E. 240. If the discount was 20%, what would its price be after the discount? (Qalubia 2013)



5 In a shop, the original price of a blouse was L.E. 200 and the original price of a dress was L.E. 150. Sara bought them at a 25% discount. Calculate what sara paid after discount.



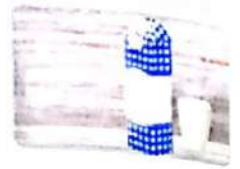
- 6 The discount percentage in a shop is 10%. If Hend wants to buy a blouse, its price before discount is L.E. 130 and a dress, whose price before discount is L.E. 250.



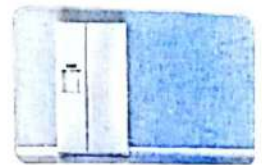
(Beni Suef 2011)

How much money will she pay after discount?

- 7 In one of the commercial shops, the price of a milk carton is L.E. 5. If you bought two cartons, there would be a discount 15% for each two cartons. **Calculate** the buying price of 6 cartons of milk. Is the saved money after discount enough to buy any other cartons of milk?



- 8 If the production cost of a fridge is L.E. 9 500 and a 10% production tax is added to the cost.



What is the total cost of the fridge?

- 9 A merchant sold a refrigerator for L.E. 5 600. If this price is more than its price in the last year by 8%. **Calculate** the price of the refrigerator in the last year.

Second Profit and loss

10 Choose the correct answer:

- a If the buying price of a fridge is L.E. 2400 and the selling price is L.E. 2640, the profit percentage is (28% **or** 20% **or** 10% **or** 30%)
- b If the selling price of some goods is L.E. 23 000 and the percentage of the profit is 15%, then the profit is L.E.
(20 000 **or** 30 000 **or** 3 000 **or** 2 000)
- c A merchant bought a quantity of orange for L.E. 560. If he sold a part of this quantity for L.E. 490 and the rest went rotten, then the percentage of his loss = % (12.5 **or** 15.2 **or** 125 **or** 2.5)

11 Complete the following table:

	The cost price (c.p)	The selling price (s.p)	The profit	The percentage of profit
a	2 000	2 200	.....	.....
b	7 500	.....	500	.....
c	6 000	.....	.....	15%
d	.....	4 600	400	.....
e	.....	.....	2 000	20%

12 Complete the following table:

	The cost price (c.p)	The selling price (s.p)	The loss	The percentage of loss
a	3 000	2 700	.....	.....
b	7 200	.....	.....	24%
c	6 400	.....	800	.....
d	.....	2 400	.....	20%
e	.....	.....	1 500	15%

Life Problems

13 150 workers work in a clothes factory, the owner decided to increase the number of workers, so the number of workers increased with 30 workers in the first year, and 15 workers in the second year. **Find:**



a The percentage of increase in the first year.

.....

b The percentage of increase in the second year.

.....

- 14 A trader bought some goods for L.E. 11 500 and spent L.E. 500 to transport them, then he sold them for L.E. 9 000. **Find** the percentage of his loss.



- 15 Find the buying price of some goods which were sold for L.E. 21 505, if the percentage of the profit was 15% and **find** the profit.



- 16 Hazem bought a car for L.E. 35 000 and he spent L.E. 15 000 on repairing it, then he sold it for L.E. 55 000.



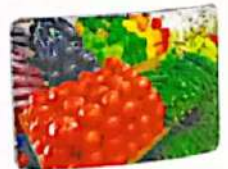
Calculate the percentage of the profit.



- 17 A man bought a house for 75 000 pounds and a farm for 100 000 pounds. If he sold the house with a loss 15% and the farm with a profit 25%. **Calculate** his total profit or loss.



- 18 A greengrocer bought an amount of vegetables for L.E. 25 000 after buying it he found that a part of it went rotten due to bad storage. Then he sold the rest for L.E. 20 000.



Find the percentage of his loss.



- 19 A shopkeeper who sells electric sets sold a refrigerator for L.E 3180. If the percentage of this profit was 6%, **find** the buying price.



Find the cost price of some goods sold for 21275 pounds with profit 15% then calculate the value of the profit.

A shopkeeper who sells electric sets sold a TV for 2 400 pounds if the percentage of his profit was 20%, find the buying price.

A company for electric appliances displays the T.V set for 1 026 pounds. If the company sold it with a profit percentage 14%, then find the selling price of the TV set. (Cairo 2019)

A trader found that if he sold the motorcycle for L.E. 1 800, his loss would be 10%. Find the purchase price, and find the required selling price for him to earn 8%.



A trader bought some goods for L.E. 20 000, he stored them and sold them afterwards with a profit 6% of the total cost price, if he sold them for 21 624 pounds, find the cost of storage.

Cumulative Exercise

- 25 A man sold a car with a profit L.E. 6 400. If the profit percentage was 8%, then **calculate** the ratio between the selling price and the cost price.



8

- 26 If the price of a T.V set has been reduced to 20%, then **calculate** the percentage to which the new price must be increased in order to get the original price.

8

Think and Explore

- 27 A merchant bought 40 boxes of apples for 45 pounds each, he sold 80% of the apples with a profit of 18%, and he sold the remaining with a loss of 15%, **find** to the nearest pound, the selling price of all the apples.



8

General Exercises

(From the School Book)

- 1 Complete the following table to be the corresponding numbers in the table are proportional.

Then write some forms of this proportion.

.....	2	5	.....	8	.....
.....	12	.....	36	.....	60

- 2 Find the number x in each of the following cases:

(a) $\frac{2}{7} = \frac{8}{x}$

- (b) If the numbers 9, 21, 3 and x are proportional

(c) $\frac{x}{9} = 15\%$

(d) $\frac{x+18}{9} = 8$

- 3 If the distance between two cities on a map is 10 cm, the real distance between them is 120 km. Find the drawing scale of the map.

And if the distance between two other cities on the same map is 6 cm calculate the real distance between them.

- 5 A picture was taken of an artificial scene with a drawing scale 1 : 100.
If the real length of a tree is 8 metres, **find** its length in the picture.
-
-

- 6 Two persons started a commercial business, the first paid L.E 5000
and the second paid L.E 8000. At the end of the year, the profit
was L.E. 3900. **Calculate** the share of each of them from the profit.
-
-

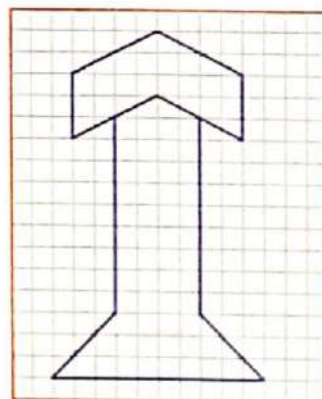
- 6 A company for selling the electric sets shows T.V for L.E. 2100. If the
percentage of the profit is 12%, **find** the buying price of the T.V.
-
-

1 Complete the following due to what you studied about the properties of quadratic:

- (a) The four sides are equal in length in each of and
- (b) The two diagonals are equal in length in each of and
- (c) The two diagonals are perpendicular in each of and
- (d) The four angles are right in each of and
- (e) The two opposite angles are equal in each of and
- (f) The two diagonals bisect each other in each of , , and
- (g) The sum of measures of the two consecutive angles equals 180 in each of , , and

2 In the opposite figure try to use the geometric tools:

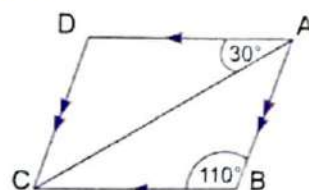
To get the greatest possible number of parallelogram. Colour the resulting parallelograms in different colour.



3 The opposite figure shows a parallelogram in which

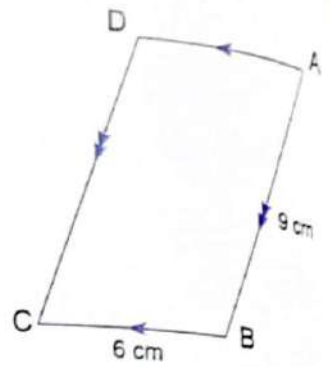
$$m(\angle B) = 110^\circ, m(\angle DAC) = 30^\circ$$

Find $m(\angle D)$, $m(\angle BAC)$ and $m(\angle ACD)$.



4 In the opposite figure:

ABCD is a parallelogram in which $AB = 9$ cm and $BC = 6$ cm. Determine the point X on the side \overline{AB} such that $AX = BC$

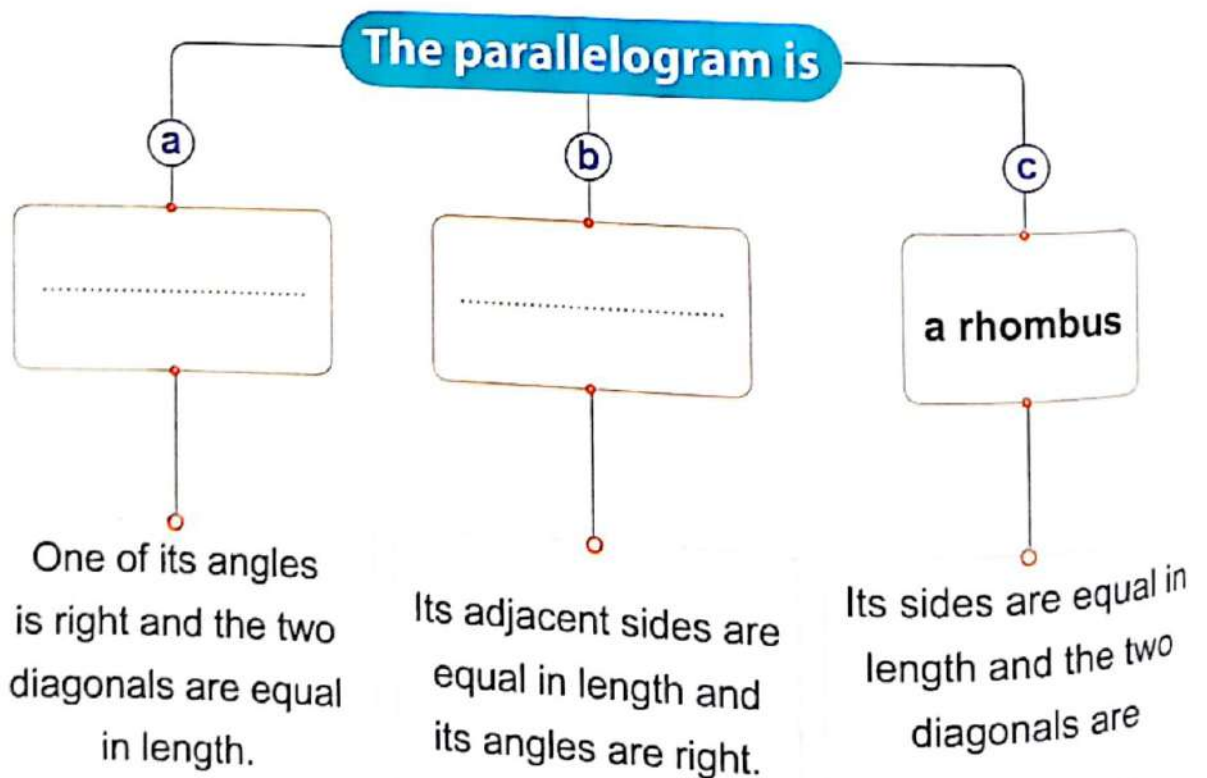


and determine the point Y on the side \overline{DC} such that $DY = BC$.

Complete the following:

- (a) The figure AXYD represents because
- (b) The figure ABCY represents because
- (c) The figure XBCY represents because
- (d) The type of the triangle AXY according to its sides is because

5 Complete the following sketch of concepts using the special cases of parallelogram:



First The parallelogram and its properties

1 Choose the correct answer:

(a) Any polygon that has 4 sides is called

(pentagon **or** triangle **or** octagon **or** quadrilateral)

(b) Quadrilateral shape has diagonals. (5 **or** 4 **or** 3 **or** 2)

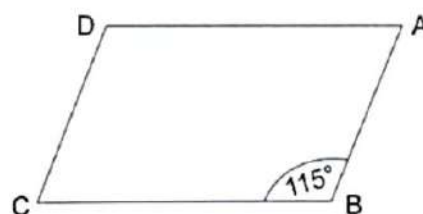
(c) In the parallelogram, the sum of measures of any two consecutive angles =° (60° **or** 90° **or** 120° **or** 180°)

(d) In the opposite figure:

ABCD is a parallelogram,

$m(\angle B) = 115^\circ$, then $m(\angle D) = \dots\dots\dots^\circ$

(100° **or** 115° **or** 70° **or** 120°) (Cairo 2018)

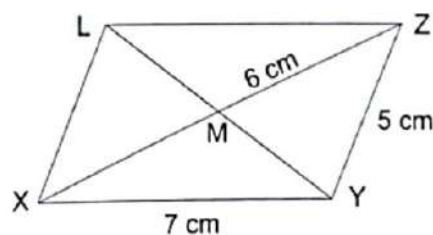


(e) In the opposite figure:

XYZL is a parallelogram,

$XY = 7\text{cm}$, then $ZL = \dots\dots\dots\text{cm}$

(4 cm **or** 5 cm **or** 6 cm **or** 7 cm) (Cairo 2018)



2 Complete each of the following:

(a) The parallelogram is

(b) In the parallelogram each two opposite angles are

(c) The two diagonals in the parallelogram.

(d) The perimeter of the parallelogram =

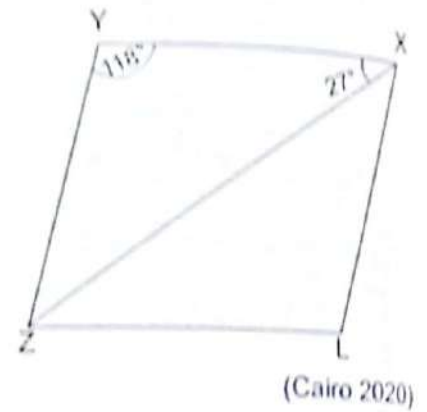
(e) If ABCD is a parallelogram then $\overline{AB} \parallel \dots\dots\dots$ and $BC = \dots\dots\dots$.

3 In the opposite figure:

XYZL is a parallelogram in which
 $m(\angle Y) = 118^\circ$, $m(\angle YXZ) = 27^\circ$

Then complete:

- (a) $m(\angle L) = \dots\dots\dots$,
 (b) $m(\angle LXZ) = \dots\dots\dots$.



4 In the opposite figure:

If ABCD is a parallelogram where:

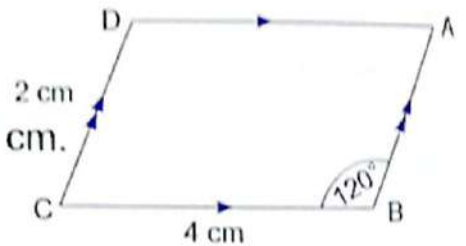
$m(\angle ABC) = 120^\circ$, $BC = 4$ cm and $CD = 2$ cm.

(a) Find: $m(\angle D)$.

(b) Complete:

1 $AD = \dots\dots\dots$ cm.

2 The perimeter of the figure ABCD = $\dots\dots\dots$ cm. (Beni Suef 2012)



5 In the opposite figure:

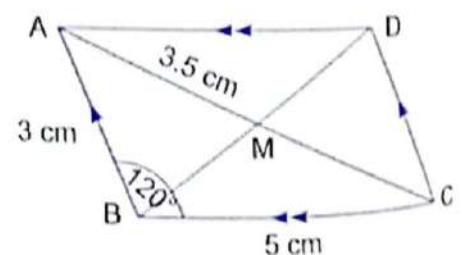
ABCD is a parallelogram in which

$m(\angle ABC) = 120^\circ$, $AM = 3.5$ cm,

$AB = 3$ cm and $BC = 5$ cm, **calculate:**

(a) $m(\angle ADC)$.

(b) The perimeter of $\triangle ADC$.



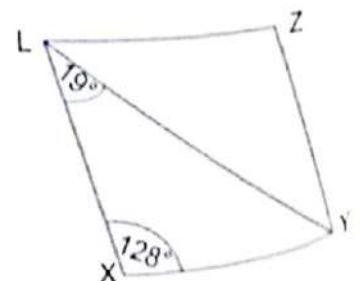
6 In the opposite figure:

XYZL is a parallelogram in which

$m(\angle X) = 128^\circ$ and $m(\angle XLY) = 19^\circ$.

Find: (a) $m(\angle Z)$.

(b) $m(\angle ZLY)$.

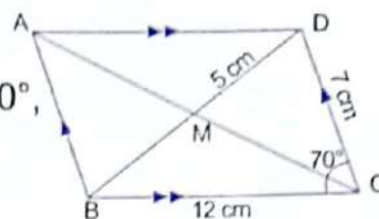


7 In the opposite figure:

ABCD is a parallelogram in which, $m(\angle C) = 70^\circ$,
 $DC = 7\text{ cm}$, $MD = 5\text{ cm}$ and $CB = 12\text{ cm}$.

Find: (a) $m(\angle ADC)$.

(b) The perimeter of $\triangle BCD$



(Damietta 2019)

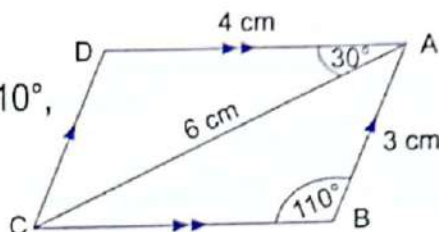
8 In the opposite figure:

ABCD is a parallelogram in which, $m(\angle B) = 110^\circ$,
 $m(\angle DAC) = 30^\circ$, $AD = 4\text{ cm}$, $AB = 3\text{ cm}$
 and $AC = 6\text{ cm}$.

Find: (a) $m(\angle D)$.

(b) $m(\angle BAC)$.

(c) The perimeter of $\triangle ABC$



(Aswan 2018)

9 In the opposite figure:

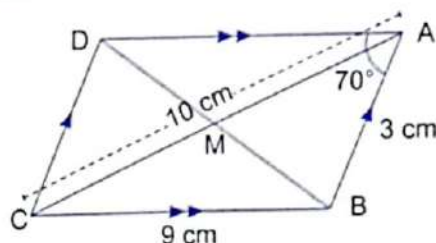
ABCD is a parallelogram where:
 $m(\angle BAD) = 70^\circ$, $AC = 10\text{ cm}$,
 $AB = 3\text{ cm}$ and $BC = 9\text{ cm}$. Find:

(a) $m(\angle BCD)$.

(b) $m(\angle ADC)$.

(c) The length of \overline{AM} .

(d) The length of \overline{CD} .



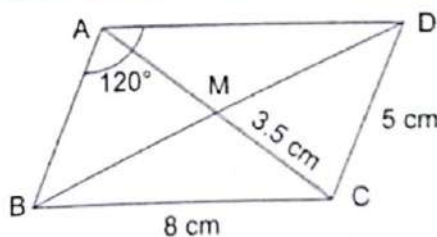
10 In the opposite figure:

ABCD is a parallelogram where:
 $CD = 5\text{ cm}$, $BC = 8\text{ cm}$, $MC = 3.5\text{ cm}$ and
 $m(\angle BAD) = 120^\circ$. Find:

(a) $m(\angle ABC)$.

(b) The length of \overline{AB} .

(c) The length of \overline{AC} .

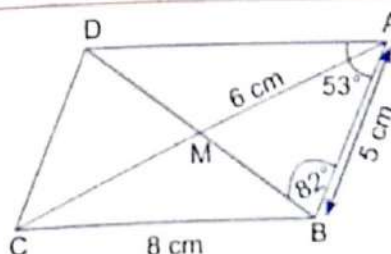


11 In the opposite figure:

ABCD is a parallelogram where:
 $AB = 5\text{ cm}$, $BC = 8\text{ cm}$, $AM = 6\text{ cm}$,
 $m(\angle BAD) = 53^\circ$ and $m(\angle ABD) = 82^\circ$. Find:

(a) $m(\angle BCD)$.

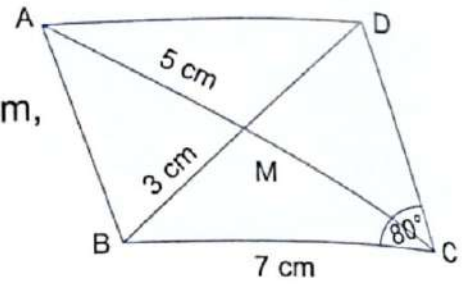
(b) The perimeter of $\triangle ADC$.



12 In the opposite figure:

ABCD is \square in which $BC = 7$ cm, $BM = 3$ cm, $AM = 5$ cm and $m(\angle BCD) = 80^\circ$. **Find:**

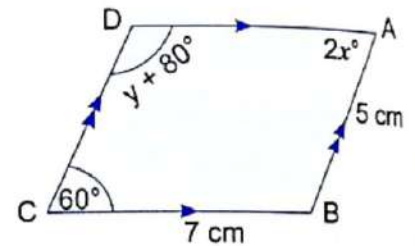
- $m(\angle ADC)$.
- The perimeter of $\triangle BMC$.



13 In the opposite figure:

ABCD is a parallelogram in which $AB = 5$ cm, $BC = 7$ cm and $m(\angle C) = 60^\circ$. **Calculate:**

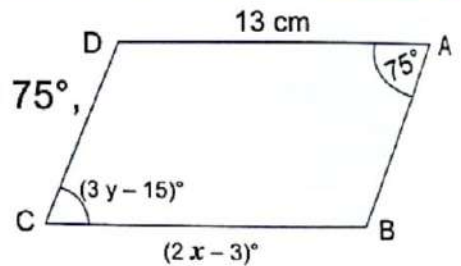
- The value of x and y .
- The perimeter of $\square ABCD$.



14 In the opposite figure:

ABCD is a parallelogram in which $m(\angle A) = 75^\circ$, $m(\angle C) = (3y - 15)^\circ$, $AD = 13$ cm and $BC = (2x - 3)$ cm.

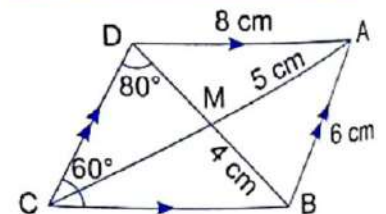
Find the values of x , y .



15 In the opposite figure:

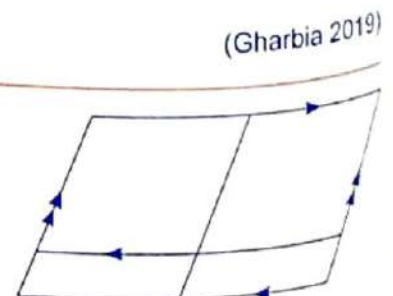
ABCD is a parallelogram in which: $m(\angle C) = 60^\circ$ and $m(\angle BDC) = 80^\circ$. **Find:**

- $m(\angle A)$.
- $m(\angle ADB)$ in degree.
- The length of \overline{MC} .
- The length of \overline{CD} .
- The perimeter of the figure ABCD.



16 In the opposite figure:

The number of parallelograms is



Second Special cases of the parallelogram

17 Choose the correct answer:

- (a) Both square and rectangle have four angles
(acute **or** obtuse **or** right)
- (b) The diagonals of the rhombus are
(equal **or** parallel **or** bisect each other)
- (c) The two diagonals are equal in length and not perpendicular in
(rectangle **or** square **or** rhombus)
- (d) The parallelogram in which one angle is right and two adjacent sides are equal in length is called (square **or** rhombus **or** rectangle)
- (e) If the diagonals of a parallelogram are equal in length and perpendicular then it is (square **or** rhombus **or** rectangle)

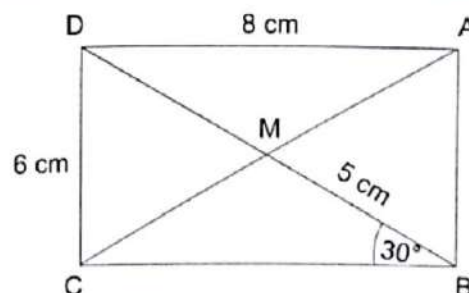
18 Complete:

- (a) The four sides are equal in length in each of and
- (b) The rhombus whose one of its angles is right is called
- (c) The two diagonals are perpendicular and not equal in length in the
- (d) The opposite angles are equal in measure in each of, and
- (e) If ABCD is a rhombus in which $CB = 9$ cm and $AB = 3x$ cm, then the value of $x =$

19 In the opposite figure, complete:

If ABCD is a rectangle:

- (a) $AB =$ cm.
- (b) $BC =$ = cm.
- (c) $AC =$ cm.
- (d) $m(\angle CDA) =$
- (e) The perimeter of rectangle ABCD = cm.



20 In the opposite figure:

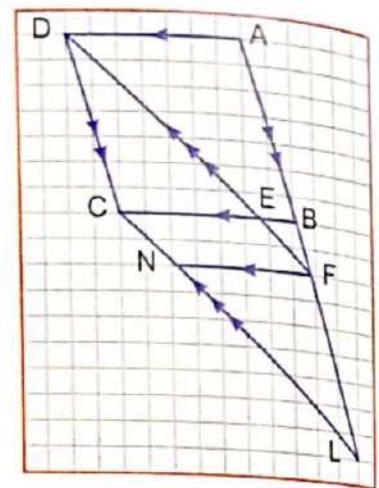
$\overline{AD} \parallel \overline{BC}$, $\overline{AB} \parallel \overline{DC}$, $\overline{DF} \parallel \overline{CL}$

Answer the following:

(a) Name and write 3 parallelograms.

(b) Name and write 3 trapeziums.

(c) Name and write 3 triangles.



21 In the opposite figure:

ABCD is a rhombus, $m(\angle ADC) = 60^\circ$ and $AB = 4$ cm. $\triangle DCE$ is an equilateral triangle.

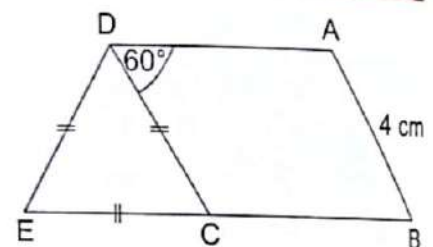
Find:

(a) $m(\angle B)$.

(b) $m(\angle A)$.

(c) The length of \overline{BE} .

(d) The perimeter of trapezium ABED.



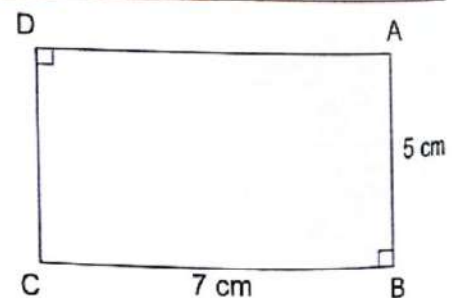
22 In the opposite figure:

ABCD is a rectangle in which

$AB = 5$ cm and $BC = 7$ cm

(a) Draw a square inside the rectangle such that: \overline{AB} is one of its sides.

(b) Calculate the perimeter of the square.



23 XYZL is a trapezium in which

$\overline{XY} \parallel \overline{ZL}$, $m(\angle X) = 90^\circ$, $XY = 7$ cm

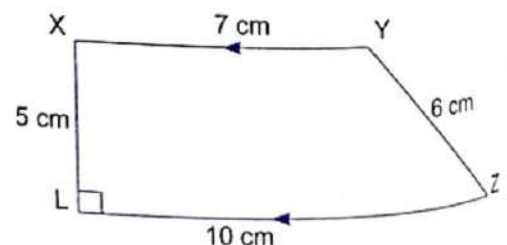
$XL = 5$ cm, $ZL = 10$ cm and $YZ = 6$ cm

Put point M on \overline{ZL} to make the figure XYML a rectangle, then **Find:**

(a) $m(\angle YML)$

(b) The length of \overline{YM}

(c) The perimeter of the rectangle XYML

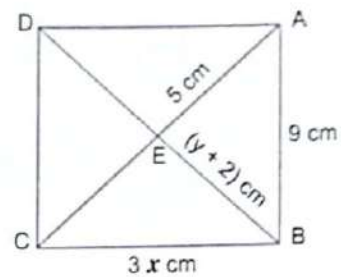


24 In the opposite figure:

ABCD is a square:

$AB = 9 \text{ cm}$, $BC = 3x \text{ cm}$,

$EC = 5 \text{ cm}$ and $BE = (y + 2)$



(a) Find the value of x

(b) Find the value of y

Cumulative Exercise

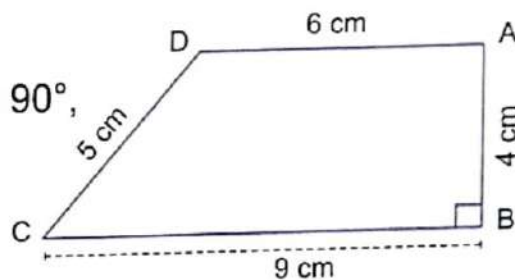
25 In the opposite figure:

ABCD is a trapezium in which $m(\angle B) = 90^\circ$,

$AD = 6 \text{ cm}$, $AB = 4 \text{ cm}$, $BC = 9 \text{ cm}$

and $DC = 5 \text{ cm}$. Locate point X on \overline{CB}

for the figure ABXD to be a rectangle,



then find:

(a) $m(\angle DXB)$ and the length of \overline{BX} . (A tip: Draw $\overline{DX} \perp \overline{CB}$ to get X)

(b) The area of the figure ABCD.

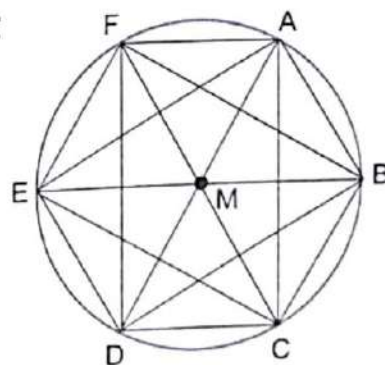
Think and Explore

26 In the opposite figure: ABCDEF is a regular hexagon drawn inside a circle M.

Using the geometric tools, answer the following:

(a) Write the greatest number of parallelograms you can get from the figure.

(b) Write the greatest number of trapeziums you can get from the figure.



- 1 Discover the pattern in each case of the following and describe it then complete its repetition twice:

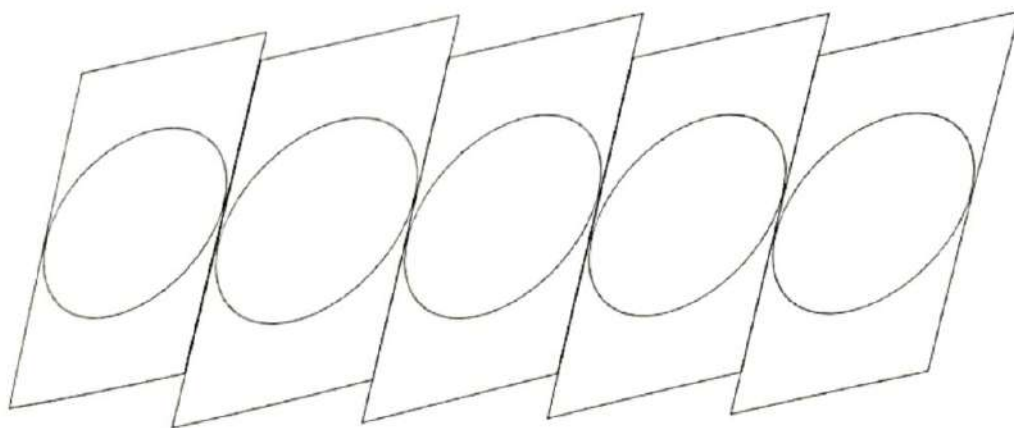
(a) 

(b) 

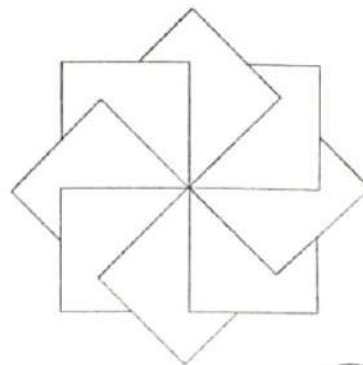
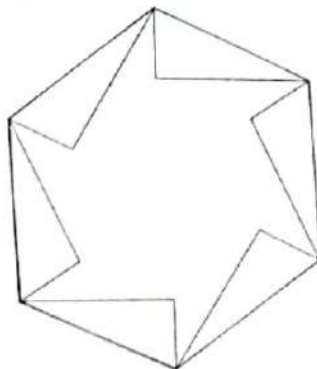
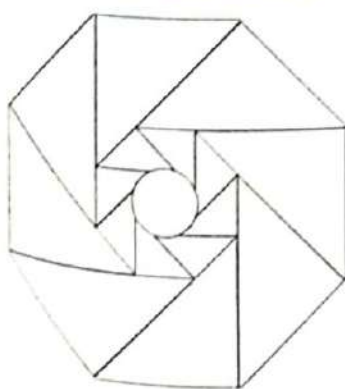
(c) 

(d) 

- 2 Discover the pattern, describe it, then complete by repeating it (twice).



- 3 Discover the pattern and colour its repetition in each shape alone with different colours to get an art figure.



The visual patterns

1 Choose the next pattern:

(a) ABBC ABBC

(ABCA or ACCB or ABBC)

(b) ☆ □ ☆, ☆ □ □ ☆

(☆ □ □ □ ☆ or ☆ □ ☆ or ☆ ☆ ☆)

(c) □, □, □,

( or  or )

(d) 😊, 😊, 😊,

(😊😊😊 or 😊😞😊 or 😞😊😞)

2 Complete each of the following pattern






(a) ○ △ □ ○ △ □

(b)   

(c) ○ ○ ○ ○

(d) □ ○ □ ○

(e)    

(f)     

(g)      

(h)      

(i) XYZ XYZ XYZ




(j)      

(k)   

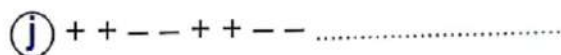
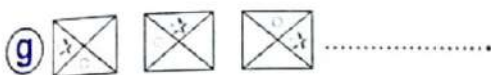
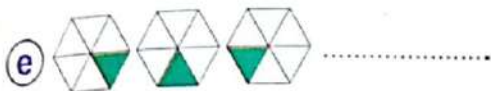
(l) !? !!? !!!? !!!!?

(m)   

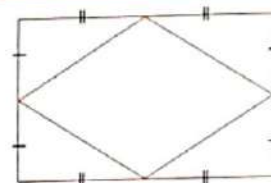
(n)    

(o)   

3 Discover the pattern in each case of the following, then repeat it twice:



4 The opposite figure is a rectangle and the pattern can be described as joining the midpoints of the consecutive sides.



(a) Complete by drawing three internal figures in this pattern.

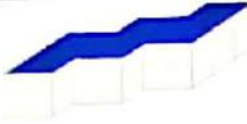
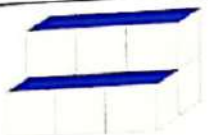

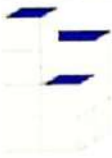

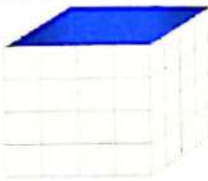
(b) Colour the obtained figure by different colours to get an art figure.

Think and Explore

5 Discover the pattern and draw the next shape:

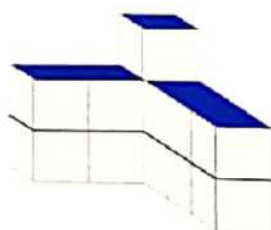


- 1 Find the volume of each solid in the following considering the volume's unit is cm^3 :

<p>(a) </p> <p>The volume of the solid = cm^3.</p>	<p>(b) </p> <p>The volume of the solid = cm^3.</p>	<p>(c) </p> <p>The volume of the solid = cm^3.</p>
<p>(d) </p> <p>The volume of the solid = cm^3.</p>	<p>(e) </p> <p>The volume of the solid = cm^3.</p>	<p>(f) </p> <p>The volume of the solid = cm^3.</p>

- 2 Find the volume of each of the following solids considering the volume's unit is the games cube whose volume is 8 cm^3

(a)



(b)



- 3 Convert the following volumes into the opposite volumes' units:

(a) $120 \text{ dm}^3 = \text{..... } \text{cm}^3$

(b) $8200 \text{ mm}^3 = \text{..... } \text{cm}^3$

(c) $3 \text{ m}^3 = \text{..... } \text{mm}^3$

(d) $2.1 \text{ cm}^3 = \text{..... } \text{mm}^3$

(e) $56000 \text{ cm}^3 = \text{..... } \text{dm}^3$

Volumes

1 Choose the correct answer:

(a) A is the shape that represents the cube.

(dice **or** box **or** rock **or** pyramid)

(b) The number of vertices of the cuboid is (8 **or** 12 **or** 6 **or** 4)

(c) The cubic centimetre is a unit of measuring the

(length **or** area **or** volume **or** perimeter)

(d) The best unit for estimating the volume of the class is

(km **or** m² **or** dm² **or** m³)

(e) 9 m³ (90 dm³ **or** 900 dm³ **or** 9000 dm² **or** 9000 cm³)

2 Complete each of the following:

(a) A cone is a solid with vertex and a base shape.


(b) The is any object that occupies a room in the space.

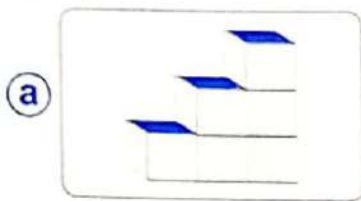
(c) The line segment resulted from the intersection of two faces is called

(d) The number of units of which the solid consists is called of the solid.


(e) If the cuboid has equal dimensions, then it is called a

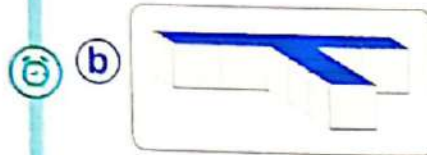
(f) The edge length of a cube is 6 cm, then the sum of all edge lengths = cm

- 3 Considering the cube  is a unit for the volume, complete the following:




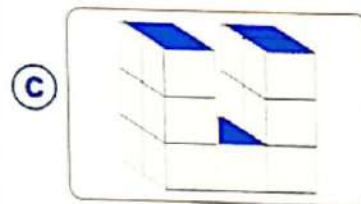
The number of cubes =

The volume = 





The number of cubes =

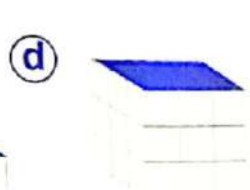
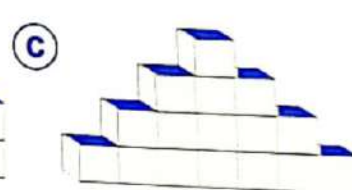
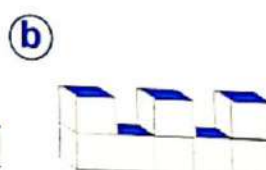
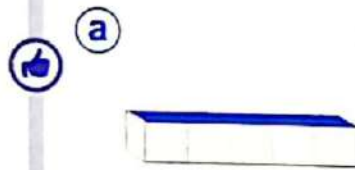
The volume = 




The number of cubes =

The volume = 

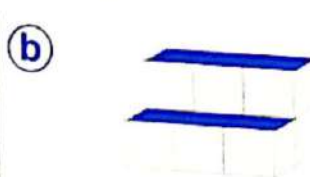
- 4 Find the volume of the following solids considering the unit of measuring volume is () 1 cm^3 :



- 5 Find the volume of the following solids considering the measuring unit of volume () is 1 cm^3 :



The volume of the solid = cm^3 .



The volume of the solid = cm^3 .



The volume of the solid = cm^3 .

6 Complete each of the following:

a $3 \text{ m}^3 = \dots \text{ mm}^3$

b $2.1 \text{ cm}^3 = \dots \text{ mm}^3$

c $6\,500 \text{ dm}^3 = \dots \text{ cm}^3$

d $4 \text{ m}^3 = \dots \text{ dm}^3$

e $0.7005 \text{ cm}^3 = \dots \text{ mm}^3$

f $300 \text{ mm}^3 = \dots \text{ cm}^3$

g $6\,500 \text{ dm}^3 = \dots \text{ m}^3$ (Gharbia 2019)

h $12 \text{ m}^3 = \dots \text{ dm}^3 = \dots \text{ cm}^3$

i $4 \text{ m}^3 = \dots \text{ dm}^3$

j $0.003 \text{ dm}^3 = \dots \text{ cm}^3$

k $12\,000 \text{ cm}^3 = \dots \text{ dm}^3$ (Kafr El-Sheikh 2018)

l $198\,000\,000 \text{ mm}^3 = \dots \text{ dm}^3$

m $6\,500 \text{ dm}^3 = \dots \text{ m}^3$ (Giza 2018)

n $4\,280 \text{ mm}^3 = \dots \text{ cm}^3$

o $0.001 \text{ dm}^3 = \dots \text{ cm}^3$

p $10 \text{ m}^3 = \dots \text{ dm}^3$

Cumulative Exercise

7 Complete each of the following:

a $10 \text{ cm}^3 = \dots \text{ dm}^3$

b $7 \text{ mm}^3 = \dots \text{ cm}^3$

c $5 \text{ m}^3 = \dots \text{ dm}^3$

d $5.2 \text{ cm}^3 = \dots \text{ mm}^3$

e $1.5 \text{ m}^3 = \dots \text{ dm}^3$

f $1.11 \text{ m}^3 = \dots \text{ cm}^3$

g $700\,000 \text{ mm}^3 = \dots \text{ cm}^3$

h $5.6 \text{ dm}^3 = \dots \text{ cm}^3$

Think and Explore

8 Complete each of the following:

a $120 \text{ dm}^3 \times 0.2 \text{ m}^3 = \dots \text{ m}^3$

b $2.5 \text{ dm}^3 + 500 \text{ cm}^3 = \dots \text{ dm}^3$

(Menofia 2020)

c $1.2 \text{ dm}^3 + 25\,000 \text{ mm}^3 + 80 \text{ cm}^3 = \dots \text{ dm}^3$

d $0.0075 \text{ m}^3 \div 50 \text{ dm}^3 = \dots \text{ cm}^3$

1 Which is greater in volume?

A cuboid of dimensions 70, 50 and 30 cm or a cuboid whose base area = 2925 cm^2 and its height = 35 cm.

2 How many cm^3 are enough to form a cuboid of dimensions 17, 13 and 11 cm.

3 Complete the following table:

The dimensions of the cuboid			The area of the base	The volume
Length	Width	Height	cm^2	cm^3
12	.....	7	60	.....
.....	4	8	.....	160
8	6	.....	.....	528
21.5	.....	.....	365.5	4751.5

4 A juice case in the shape of a cuboid its base has a square shaped of side length 6 cm and its height is 15 cm. Calculate the volume of juice which fills the case completely.

- 5 A sweet case in the shape of a cuboid its internal dimensions are 21, 18 and 6 cm. It is wanted to fill it with pieces of chocolate each of them is a cuboid of dimensions 3, 3 and 1 cm. calculate the number of pieces of chocolate which fill the case completely.

- 6 A truck for transporting goods its dimensions are 3.2, 1.5 and 2 metres. It is wanted to fill it with carton boxes for mineral water bottles to distribute it to the commercial shops.



The dimensions of one carton box are 40, 25 and 25 cm **calculate:**

- (a) The greatest number of carton boxes that can be carried by the truck.
- (b) The cost of transportation if the cost of transporting one carton is 0.75 pounds.

- 7 A swimming pool, its internal dimensions are 30, 15 and 2 metres.

405 m³ of water are poured into it. **Find:**

- (a) The height of water in the swimming pool.
- (b) The volume of water which is needed to fill the swimming pool completely.



The volume of a cuboid

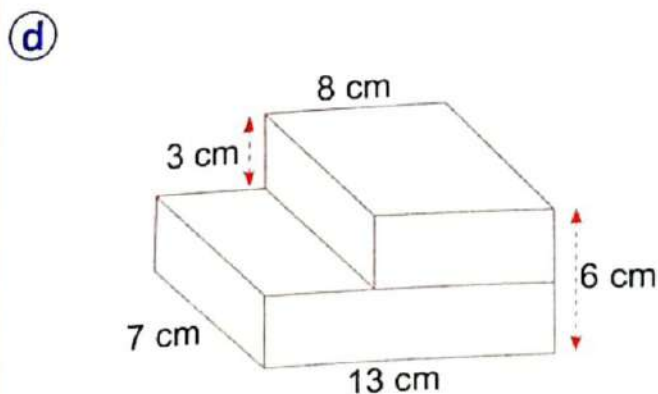
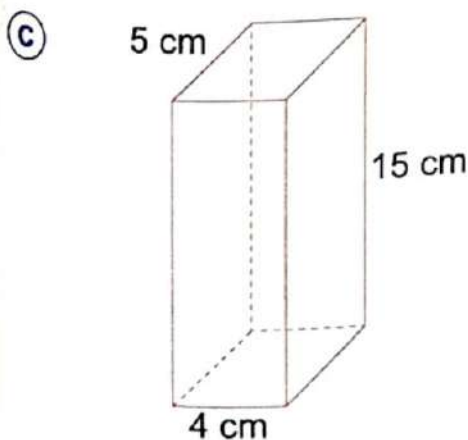
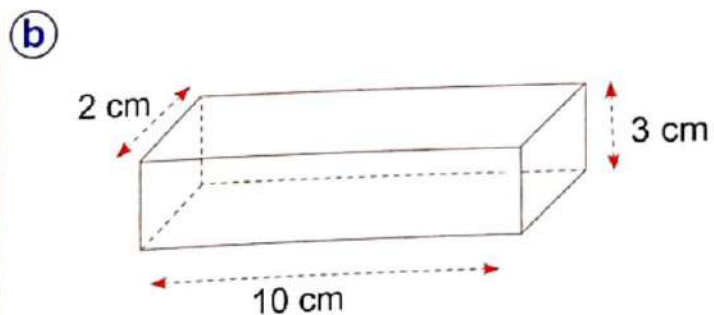
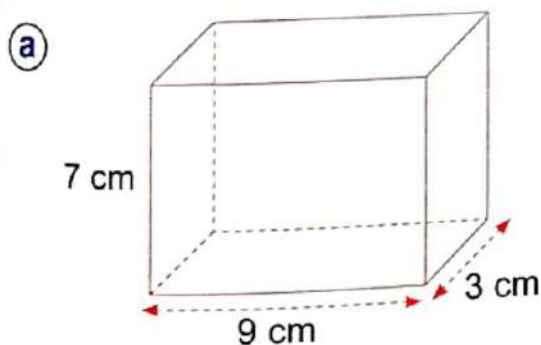
1 Choose the correct answer:

- a) The volume of a cuboid is 300 cm^3 and its base area is 25 cm^2 , then its height = (12 cm or 13 cm² or 14 cm³ or 9 m) (Beheira 2020)
- b) A cuboid with dimensions 4 cm, 3 cm and 5 cm, then its volume = cm³. (10 or 25 or 60 or 50) (Cairo 2020)
- c) The volume of a cuboid is 160 cm^3 and its base is square with side length = 4 cm, then its height = cm. (42 or 8.5 or 10 or 4.5) (Cairo 2019)
- d) A cuboid of volume $1\,400 \text{ cm}^3$, its height is 14 cm, then the area of its base = cm². (10 or 50 or 100 or 150) (Cairo 2020)
- e) $5 \text{ m}^3 = \dots\dots\dots$. (5000 dm³ or 5000 dm² or 500 dm³ or 500 dm) (Menofia 2012)
- f) If the volume of a cuboid = 300 cm^3 and its base dimensions are 6 and 5 cm, then its height = cm. (8 or 12 or 10 or 30) (Sharkia 2011)
- g) The volume of a cuboid with a square base of side length 6 cm and its height is 10 cm = cm³. (60 or 120 or 360 or 600) (Giza 2019)
- h) A cuboid in which the sum of dimensions is 6 cm, then the sum of its edge lengths = cm. (18 or 24 or 20 or 30)
- i) A cuboid in which the sum of dimensions is 14 dm. If its height is 6 dm and its length is 5 dm, then its volume = dm³. (70 or 90 or 80 or 100)
- j) If the volume of a cuboid is 500 cm^3 and its base is in the form of a square with side length 5 cm, then its height = cm. (5 or 10 or 30 or 20)

2 Complete the following:

- (a) The cuboid has edges
- (b) The volume of a cuboid = \times \times
- (c) The volume of a cuboid = \times \times
- (d) The cuboid has faces that are in the form of
- (e) The volume of a cuboid with dimensions 2 cm, 3 cm and 5 cm = cm^3 .
(Alex. 2019)
- (f) The volume of a cuboid room with dimensions 4 m, 3 m and 5 m = m^3 .
- (g) If the volume of a cuboid is 400 cm^3 , its length is 8 dm and its width is 5 cm, then its height = cm.
- (h) The volume of a cuboid is 27 cm^3 and its height is 3 cm, then its base area = cm^2 .

3 Find the volume of each figure:



- 4 Find in cm^3 the volume of the cuboid whose dimensions are 6 cm, 5 cm and 4 cm. (Cairo 2018)

- 5 A cuboid, its volume is 64 cm^3 and its base area is 16 cm^2 . Find the height of the cuboid. (Cairo 2020)

- 6 If the volume of a cuboid is 24 cm^3 and the area of its base is 6 cm^2 . Calculate its height. (Giza 2018)

Life Problems

- 7 A cuboid with dimensions 6 cm, 5 cm and 8 cm and another cuboid whose base area is 28 cm^2 and its height is 8 cm. Find the difference between their volumes.

- 8 A tank in the shape of a cuboid with dimensions 7 m, 5 m and 9 m. What is the volume of water which fills its third?

- 9 A box in the shape of a cuboid, with internal dimensions 21 cm, 18 cm and 6 cm, is wanted to be filled with pieces of chocolate, each of them is a cuboid with dimensions 3 cm, 3 cm and 1 cm. Find the number of pieces. (Beheira 2020)

- 10 A container in the shape of a cuboid, its internal dimensions are as follows: the length = 30 cm, the width = 25 cm and the height = 42 cm. An amount of gasoline is put in it, its height = $\frac{1}{3}$ the height of the container. Calculate the volume of gasoline in the container.

- 11 A carton box with internal dimensions 50, 40 and 30 cm. We want to fill it with boxes of tea in the shape of cuboids. The dimensions of each box are 10 cm, 5 cm and 6 cm. **Calculate** the greatest number of tea boxes that can be put in that box.



- 12 A lorry for transporting building materials, with a container whose internal dimensions are 5 m, 108 m and 0.6 m. We want to fill it completely with bricks of dimensions 25 cm, 12 cm and 6 cm. **Calculate:**



- a) The greatest number of bricks that can be put in the container of the lorry.
b) The cost of transporting the bricks if the cost of transporting 1000 bricks is 35 pounds.

- 13 **How many bricks can we use to build a cuboid-shaped wall** with dimensions 3.2 m, 2.5 m and 4 m if each brick is in the shape of a small cuboid with dimensions 16 cm, 25 cm and 40 cm.

- 14 A swimming pool is 20 cm in length, 10 m in width and 2 m in depth. **Calculate** in cubic metres the amount of dust taken from it when it was dug.

- 15 Two vessels: one of them is a square-based cuboid with side length of 14 cm and height of 15 cm and the other vessel is a cuboid with dimensions 16 cm, 15 cm and 40 cm. **Which of the two vessels is bigger? And what's the difference between their volumes?**

- 16 A cuboid can with dimensions 30 cm, 30 cm and 10 cm is filled with oil. **Is** it possible to fill another can with the same oil volume if the other can is a cuboid with a square base area of 300 cm^2 and height of 0.35 metre? **Why?**

17 The volume of a cuboid is $2\,128\text{ cm}^3$, its length is 19 cm and its height is 14 cm. **Calculate:**

(a) The width of the cuboid.

(b) The base area of the cuboid.

18 A builder used 1500 bricks to build a wall. **Calculate** the volume of the wall in m^3 if the brick is in the shape of a cuboid with dimensions 25, 12 and 6 centimetres.



19 A cuboid, the perimeter of its base is 40 cm and its height is 12 cm. If the ratio between the dimensions of its base is 3 : 2, **find** its volume.

20 $3\,600\text{ cm}^3$ of water is poured into a vessel. The vessel is a square-based cuboid. If the side length of its base is 20 cm, **find** the height of water level in the vessel.

21 If the ratio among the lengths of the three dimensions of a cuboid is 5 : 4 : 3 and the sum of them equals 48 cm, **find** the volume of the cuboid.

(Suez 2018)

22 A cuboid, the perimeter of its base is 36 cm and the ratio between the length and width of its base equals 5 : 4. **Find** its length and width, then **calculate** its volume if its height is 12 cm.

(Cairo 2020)

- 23 If the sum of dimensions of a cuboid is 220 cm, and the ratio among them is 2 : 3 : 5, **find** its volume.

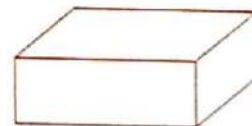
- 24 If the sum of all edges of a cuboid is 840 cm and the ratio between its dimensions is 5 : 6 : 10, **calculate** its volume.

Cumulative Exercises

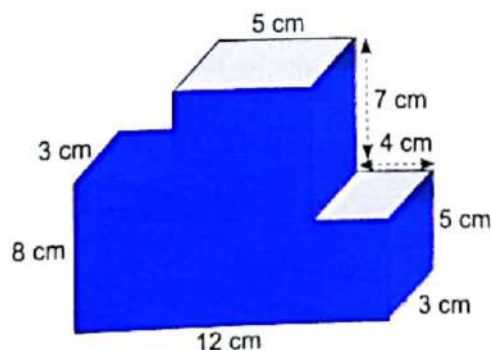
- 25 The base of a cuboid is in the shape of a square whose perimeter is 60 cm. **Calculate** the volume of the cuboid knowing that the ratio between the side length of its base and its height is 3 : 5.

Think and Explore

- 26 In a cuboid if $L \times W = 20 \text{ cm}^2$, $W \times H = 12 \text{ cm}^2$ and $L \times H = 15 \text{ cm}^2$, **find** its volume where the three dimensions are whole numbers.



- 27 Calculate the volume of the following solid:



1 Complete following table:

The cube				
The edge length cm	The perimeter of the base cm	The area of the base cm^2	The sum of lengths of all edges cm	The volume cm^3
6	.....	.....	.....	216
.....	20	.....	.....	.....
.....	.....	49	.....	.....
.....	.....	.....	108	.....

2 We have an amount of rice, its volume is 27000 cm^3 . It is needed to put it in a carton box. **Show which of the following boxes is the more suitable, and why.**

- (a) A cuboid with dimensions 45, 40 and 15 cm.
 (b) A cube, its internal edge length 20 cm.

3 A commercial shop shows a cubic case with edge length 12 cm, it is filled with honey. **Calculate** the amount of money that a person pays for buying 3 cases of honey if one cm^3 is sold for 0.05 pounds.

- 4 A box of carton in the shape of a cube. Its external edge length is 30 cm. An antique made of glass is put inside it. And for protecting it from damage, the box is put inside another box of carton in the shape of a cube, its internal edge length is 36 cm, the empty part between the two boxes is filled with sponge from all over sides. **Calculate** the volume of the sponge.
-
-
-

- 5 A cube of cheese, its edge length is 15 cm. It needs to be divided into small cubes, the edge length of each is 3 cm, for presenting them through meals. **Calculate** the number of the resulting small cubes.
-
-
-

- 6 An aquarium for fish is cube shaped. It has a lid. The internal edge length of the aquarium is 35 cm. The aquarium is made of glass. **Find** the volume of the glass given that the thickness of the glass is 0.5 cm.
-
-
-

The volume of a cube

1 Choose the correct answer:

- (a) The sum of edge lengths of a cube is 48 cm, then its volume =
(216 cm³ or 64 cm³ or 216 cm² or 64 cm²) (Alex. 2019)
- (b) If the perimeter of one face of a cube is 4 cm, then its volume = cm³.
(1 or 4 or 6 or 12)
- (c) If the volume of a cube is 125 cm³, then its edge =
(25 cm² or 25 cm or 5 cm or 5 cm²)
- (d) If the sum of all edges of a cube is 132 cm, then its volume = cm³.
(121 or 144 or 1331 or 1336) (Qena 2020)
- (e) The area of one face of a cube is 25 cm², then its volume = cm³.
(5 or 20 or 25 or 125)
- (f) The perimeter of a cube's base is 12 cm, then its volume = cm³.
(12 or 24 or 27 or 36)
- (g) The volume of the cube in which the perimeter of one of its faces is 36 cm = cm³.
(Cairo 2018)
(36 or 6 or 729 or 216)
- (h) The area of one face of a cube in which the sum of areas of its faces is 54 cm² = cm²
(9 or 6 or 7 or 8)
- (i) The volume of a cube whose side length is 5 cm the volume of a cuboid whose dimensions are 3 cm, 4 cm and 6 cm.
(≥ or > or < or =)
- (j) The volume of a cube in which the sum of areas of its faces is 96 cm² = cm³
(16 or 4 or 64 or 256)

2 Complete the following:

- (a) The volume of the cube = × ×
- (b) The cube has edges
- (c) The cube is a cuboid with dimensions.
- (d) The volume of a cube of edge length 5 cm =

- (e) If the perimeter of one face of a cube is 8 cm, then its volume = cm^3 . (Giza 2019)
- (f) If the volume of a cube is 216 cm^3 , then its edge = cm. (Giza 2020)
- (g) If the volume of a cube is 64 cm^3 , then the area of one of its faces = cm^2 .
- (h) If the area of one face of a cube is 9 cm^2 , then its volume = cm^3 .
- (i) If the volume of a cube is 1 cm^3 , then the sum of its edges = cm.

3 Calculate the volume of each of the following:

- (a) The cube that has an edge length of 5 cm. (Cairo 2020)
- (b) The cube that has a base perimeter of 36 cm.
- (c) The cube that has a base area of 169 cm^2 .
- (d) The cube in which the sum of all edges is 132 cm.
- (e) The cube of base area 16 cm^2 .
- (f) The cube whose edge length equals the side length of an equilateral triangle with perimeter 36 cm.

4 Which is greater in volume, a cuboid which has dimensions of 30, 40 and 50 centimetres or a cube that has an edge length of 40 cm?

5 Which is greater in volume, a cuboid that has dimensions of 14, 12 and 10 centimetres or a cube that has an edge length of 12 cm?

Calculate the difference between their volumes.

Life Problems

6 A metallic piece in the shape of a cuboid with dimensions 4 cm, 6 cm and 9 cm is melted and converted to a cube. Find the edge length of the cube. (Kafr El-Sheikh 2019)

7 A cuboid box with dimensions 60 cm, 48 cm and 24 cm is used to pack cubic bars of soap. If the edge length of the soap is 6 cm, how many bars of soap will fit in the box?

- 8 A metal cube with an edge length of 20 cm was melted and turned into a cuboid with base dimensions 16 cm and 50 cm. **Find** the height of the cuboid.
- 9 **Find** the edge length of a cube whose volume is 125 cm^3 , then **find** the area of one of its faces.
- 10 **Find** the volume of a cube with an edge length that equals the height of a cuboid with volume 120 cm^3 and base area 30 cm^2 .
- 11 A cuboid box with dimensions 56 cm, 42 cm and 28 cm is used to pack cubic packets of biscuits. If the edge length of a packet is 7 cm, how many packets of biscuits will fit in the box?
- 12 A tin in the shape of a cube, whose internal edge length is 36 cm, is filled with maize oil. We want to put it in small tins in the shape of a cube, whose internal edge lengths are 9 cm each. **Find** the number of the small tins needed to do that.
- 13 A metallic cube of edge length 9 cm, we need to convert it into ingots in the shape of cuboids each of them has the dimensions 3 cm, 3 cm and 1 cm. **Calculate** the number of ingots that are obtained. (Beni Suef 2019)
- 14 A cubic container with an edge length 30 cm, was filled with water, then the water was poured into another container that has a cuboid shape. If its base dimensions were 10 cm and 30 cm, **calculate** the height of the water in the cuboid container.
- 15 A glass vessel is in the shape of a cube, whose inner edge length is 30 cm. This vessel contains an amount of water. If we throw a metallic piece in it, and the water level rises 5 cm, **find** the volume of the metallic piece.

- 16 A vessel is filled completely with water. If a metallic piece was thrown inside it, and we collected the falling water in a cubic vessel of internal edge length 5 cm where the falling water filled it completely. **Find** the volume of the metallic piece.



- 17 A cubic fish tank has an edge length of 100 cm. If water was poured into it with a rate of $500\,000\text{ cm}^3$ per minute, how much time is needed to fill the tank?

- 18 A cube-shaped piece of metal, with edge length 20 cm, was melted and reshaped into 64 small cubes. **Find** the edge length of each small cube.

- 19 A metallic cube whose edge length is 12 cm was melted and converted to a number of cuboids alloys with dimensions 3 cm, 4 cm and 6 cm. **Calculate** the number of alloys which were obtained. (Giza 2020)

- 20 A box of milk is in the shape of a cube of edge length 12 cm. If we want to put a number of these boxes in a box of carton in the shape of a cube of edge length 60 cm, how many boxes of milk can be put in the carton box?

- 21 A cube of metal, whose edge length is 36 cm, is melted to be used in industry and converted to a cuboid whose base dimensions are 48 cm and 27 cm. **Calculate** its height.

Cumulative Exercise

- 22 Find the ratio between the volumes of two cubes if the volume of the first is 64 cm^3 and the edge length of the second cube exceeds the edge length of the first by 4 cm.

Think and Explore

- 23 An aquarium of fish is cubic-shaped and made of glass, if the volume of the inner cube is $27\,000\text{ cm}^3$ and the volume of the outer cube is $29\,791\text{ cm}^3$. **Calculate** the thickness of the glass.



1 Write the suitable unit from the units (m^3 , cm^3 , dm^3 , litre, ml) to measure the following:

- (a) The capacity of a water tank on the roof of a house. ()
- (b) The volume of cereals container. ()
- (c) The capacity of oil bottle. ()
- (d) The volume of an amount of medicine in a syringe. ()
- (e) The capacity of a swimming pool in a sports capacity. ()
- (f) The volume of a box of carton of T.V set. ()

2 A cube shaped vessel, its internal edge length is 30 cm. It is filled with food oil.

- (a) Calculate the capacity of the vessel in litre.
- (b) If the price of one litre of food oil is 9.5 pounds, calculate the price of all oil.



3 A container has 12 litres of honey. It is wanted to put them in smaller vessels (bottles), the capacity of each of them is 400 cm^3 . Calculate the number of bottles which is needed for that.



- 4 A patient takes a medicine spoon of capacity 3 ml daily in the morning and in the evening. After how many days does the patient take 240 cm³ from this medicine?



- 5 A container, in the shape of a cuboid, has internal dimensions of length 25 cm, width 30 cm, and height 42 cm. An amount of solar is put in it, its height = $\frac{1}{3}$ the height of the container. Calculate:

- (a) The volume of solar in the container.
(b) The total price of solar in the container
if the price of one litre of solar = 1.2 pounds.



The capacity

1 Choose the correct answer:

- a Square centimetre is a unit for measuring
(perimeter **or** area **or** volume **or** length)
- b The unit of measuring capacity is
(metre **or** square metre **or** kilometre **or** litre) (Beni Suef 2019)
- c The suitable unit for measuring the volume of a box of carton of TV set is
(m^3 **or** litre **or** mL **or** cm^3)
- d The suitable unit for measuring the capacity of a swimming pool in a sports club is
(m^3 **or** cm **or** mL **or** dm)
- e The suitable unit for measuring the capacity of a cereal container is
(L **or** mL **or** mm^3 **or** cm^3)
- f $27000 \text{ mL} = \dots\dots\dots \text{cm}^3$.
(27000 **or** 2700 **or** 270 **or** 27)
- g $5 \text{ m}^3 = \dots\dots\dots \text{dm}^3$.
(5 **or** 50 **or** 500 **or** 5000)
- h $3 \text{ litres} = \dots\dots\dots \text{cm}^3$ (Cairo 2019)
(3 **or** 30 **or** 300 **or** 3000)
- i $1000 \text{ cm}^3 = \dots\dots\dots$.
(10 dm^3 **or** 1 m^3 **or** 1 litre)
- j $750 \text{ cm}^3 = \dots\dots\dots \text{litres}$.
($\frac{1}{2}$ **or** $\frac{1}{4}$ **or** $\frac{3}{4}$)
- k $4.6 \text{ litres} = \dots\dots\dots \text{mL}$. (Cairo 2020)
(46 **or** 460 **or** 4600 **or** 46000)
- l $38 \text{ millilitres} = \dots\dots\dots \text{cm}^3$.
(38 000 **or** 0.038 **or** 380 **or** 38)
- m $\frac{3}{4}$ litre equals
(75 mL **or** 750 cm^3 **or** 7.5 dm^3 **or** 0.075 m^3)
- n $1 \text{ cm}^3 = \dots\dots\dots \text{dm}^3$.
(100 **or** 1000 **or** 0.01 **or** 0.001)

2 Complete the following:

- (b) (a) The units of measuring capacity are and
(b) $3.6 \text{ L} = \dots\dots\dots \text{ dm}^3$. (Giza 2020)
(c) $200\,000 \text{ cm}^3 = \dots\dots\dots \text{ m}^3$. (Cairo 2020)
(d) $725\,000 \text{ mm}^3 = \dots\dots\dots \text{ dm}^3$.
(e) $55 \text{ mL} = \dots\dots\dots \text{ cm}^3$ (Alex 2018)
(f) $0.35 \text{ metre cube} = \dots\dots\dots \text{ dm}^3$.
(g) $1.5 \text{ m}^3 = \dots\dots\dots \text{ mm}^3$
(h) $3.45 \text{ litres} + 0.5 \text{ dm}^3 + 50 \text{ cm}^3 = \dots\dots\dots \text{ litres}$.
(i) If the capacity of a vessel in the shape of a cube internally equals $\frac{1}{8}$ litre, then the edge length of the cube = cm.

3 Convert each of the following into cubic centimetres:

- (a) $7\,752 \text{ mL} = \dots\dots\dots \text{ cm}^3$.
(b) $450 \text{ dm}^3 = \dots\dots\dots \text{ cm}^3$.
(c) $7\,201 \text{ litres} = \dots\dots\dots \text{ cm}^3$.
(d) $9\,500 \text{ mm}^3 = \dots\dots\dots \text{ cm}^3$.
(e) $1\,75 \text{ mL} = \dots\dots\dots \text{ cm}^3$.
(f) $0.23 \text{ m}^3 = \dots\dots\dots \text{ cm}^3$.
(g) $1.79 \text{ litres} = \dots\dots\dots \text{ cm}^3$.
(h) $253.1 \text{ mL} = \dots\dots\dots \text{ cm}^3$.

4 Convert each of the following into cubic metres:

- (a) $7265 \text{ dm}^3 = \dots\dots\dots \text{ m}^3$.
(b) $725.8 \text{ litres} = \dots\dots\dots \text{ m}^3$.
(c) $8\,500\,000 \text{ mL} = \dots\dots\dots \text{ m}^3$.
(d) $5171.7 \text{ dm}^3 = \dots\dots\dots \text{ m}^3$.
(e) $7.51 \text{ litres} = \dots\dots\dots \text{ m}^3$.
(f) $11229 \text{ dm}^3 = \dots\dots\dots \text{ m}^3$.

5 Convert each of the following into litre:

- (a) $335\,000 \text{ cm}^3 = \dots\dots\dots \text{ L}$.
(b) $1\,785 \text{ cm}^3 = \dots\dots\dots \text{ L}$.
(c) $791 \text{ cm}^3 = \dots\dots\dots \text{ L}$.
(d) $723.9 \text{ cm}^3 = \dots\dots\dots \text{ L}$.
(e) $7.23 \text{ m}^3 = \dots\dots\dots \text{ L}$.
(f) $63 \text{ dm}^3 = \dots\dots\dots \text{ L}$.

Life Problems

- 6** A pot in the shape of a cube is filled with honey. If the length of its interior edge equals 20 cm, **calculate** the capacity of the pot of honey in litres. (Aswan 2013)

- 7** A tin in the shape of a cuboid, with internal dimensions 10 cm, 15 cm and 20 cm, is filled with honey. If the price of one litre of honey is L.E. 25, **find** the price of the honey in the tin. (Beni Suef 2013)

- 8** A cuboid-shaped tin with square base of inner side length 20 cm contains oil. If the height of the oil in the tin is 45 cm, **find** the volume of the oil in litres.

- 9** A swimming pool is in the shape of a cuboid with internal dimensions 40 m, 30 m and 1.8 m. **Find** its capacity in litres. (Cairo 2020)

- 10** If $\frac{3}{4}$ L of a certain medicine is packed in small bottles where the capacity of each bottle is 25 mL **Find** the number of the needed bottles.



- 11** Two containers are full of juice. The first is a cuboid-shaped with dimensions 40, 30 and 50 cm, and the second is cube-shaped with edge 60 cm long. If the juice is to be put in bottles each of capacity 0.6 litre. **Find** the number of bottles that can be filled.



- 12** If the capacity of a vessel in the shape of a cuboid is 4.5 litres, and it has a rectangular base of length 20 cm and width 9 cm, **calculate** its height.

- 13** If the capacity of a tank in the shape of a cuboid is 72 000 litres, **find** the area of the base if the height is 40 dm. (Cairo 2019)

- 14** A patient takes a medicine spoon of capacity 6 mL daily, in the morning and in the evening. **How many** days does the patient need to take 240 cm³ from this medicine?

- 15 A container is in the shape of a cuboid; with internal dimensions 32 cm length, 20 cm width and 40 cm height. If an amount of benzine is poured in it, its height = $\frac{1}{2}$ the height of the container, **calculate**:
- a The volume of benzine in the container.
 - b The total price of benzine in the container if the price of one litre of benzine = 5.5 pounds
- 16 If the internal edge length of a cube equals 15 cm and it is filled with honey.
- a **Calculate** the capacity of the cube in litre.
 - b If the price of one litre is L.E. 50, **calculate** the price of honey. (Giza 2019)
- 17 A tank of water is in the shape of a cuboid. The dimensions of the base are 40 cm and 50 cm; if 20 litres of water is poured into it, **find** the height of the water in the tank. (Menofia 2015)
- 18 A vase in the shape of a cube whose edge length equals 20 cm is wanted to be filled with black honey. **Calculate** the capacity of the pot of honey by litres. (Aswan 2013)
- 19 10 litres of water is poured into a vessel in the shape of a cuboid whose base is a square of side length 25 cm. **Find** the height of the water in the vessel. (Red Sea 2015)
- 20 The internal height of a cuboid-shaped water tank is 4 metres and the perimeter of its inner base is 9 metres and the ratio between its bases dimensions is 3 : 2. **Find** the capacity of tank in litres.

- 21 Two vessels, one is in the shape of a cube with inner edge of length 0.5m, and the other is in the shape of a cuboid with inner dimensions 5 dm, 60 cm and 0.4 m. **Find** the difference between the two capacities of the two vessels in mL.



- 22 A container has 72 litres of honey which was poured into smaller jars with a rectangular base of dimensions 18 cm and 10 cm. If the height of the honey in each one is 16 cm, **find** the number of the jars used.

- 23 A cuboid container with dimensions 12 cm, 11 cm and 20 cm was filled with oil. **Calculate** the total price of the oil, if the price of one litre is 7.5 pounds.

- 24 A container is in the shape of a cuboid. Its internal height is 40 cm and its base is square-shaped with internal perimeter 60 cm. **Find** its capacity in litres.

- 25 A cuboid vessel with a square base of side length 2 dm and height 4.5 dm. If 14500 cm^3 of water was poured in it, **find** the volume of the remaining part in litres.

Cumulative Exercise

- 26 A water tap is leaking 2000 litres of water in 5 hours. **What** is the time needed to fill a cube-shaped tank if its internal edge is 3 m?

Think and Explore

- 27 A cuboid-shaped water tank has inner dimensions of 2 m in length, 150 cm in width, and 120 dm in height; water is poured in the tank at a rate of 18000 litres per hour.
- Find:**
- (a) The time needed for the tank to be filled.
 - (b) The height of the water in the tank after half an hour.

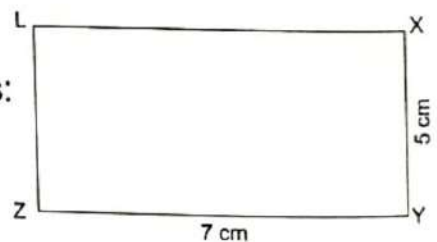
General Exercises

(From the School Book)

- 1 Write the name of the figure through the following descriptive statement:

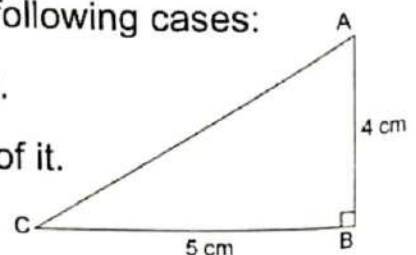
No.	The descriptive statements for the figure	The name of the figure
a	The figure ABCD in which $AB = BC = CD = DA$, the two diagonals are perpendicular not equal, $m(\angle A) \neq m(\angle B)$	.....
b	The figure XYZL in which $XY = ZL$, $YZ = XL$, $XY \neq YZ$ the two diagonals are equal.	.....
c	The figure DEFL in which $DE = LF$, $EF = DL$, $DE \neq EF$, the two diagonals are not equal, $m(\angle D) \neq m(\angle E)$.	.....
d	The figure ABCD in which $AB = BC = CD = DA$, the two diagonals are equal, and perpendicular	.....

- 2 In the opposite figure: XYZL is a rectangle in which $XY = 5$ cm and $YZ = 7$ cm. Show in steps:



- a How you can draw a square inside the rectangle such that \overline{XY} is one of its sides.
- b Write all the parallelograms which are obtained in the figure.

- 3 The opposite figure ABC is a right-angled triangle at B in which $AB = 4$ cm, $CB = 5$ cm. Try to draw a parallelogram in the following cases:



- a A parallelogram such that \overline{AB} is a diagonal of it.
- b A parallelogram such that \overline{AC} is a diagonal of it.

- 4 A lorry for transporting building materials, the internal dimensions of the container are 5 , 1.8 and 0.6 m. It is wanted to fill it completely by bricks with dimensions 25 cm, 12 cm and 6 cm. **Calculate**:
- a) The greatest number of bricks that can be put in the container of the lorry.
 - b) The cost of transporting the bricks if the cost of transporting 1000 bricks is 35 pounds.

5 **Which is greater in volume and why?**

A cuboid whose dimensions are 12 cm, 10 cm and 8 cm or a cube of edge length 10 cm.

-
- 6 A tin in the shape of a cube, its internal edge length is 36 cm, is filled with maze oil. It is wanted to put it in small tins in the shape of cubes, its internal edge length is 9 cm. **Find** the number of small tins needed to that.

-
- 7 The sum of all dimensions of a cuboid is 48 cm and the ratio among the length of its dimensions is 5 : 4 : 3. **Find** its volume.

-
- 8 A cuboid, its base is a rectangle whose perimeter = 40 cm, the ratio between its length to its width = 3 : 2. **Calculate** its volume if its height is 10 cm.

-
- 9 A box of carton, its internal dimensions are 50 , 40 and 30 cm. It is wanted to fill it with boxes of tea in the shape of cuboids, the dimensions of each box are 10 cm, 5 cm and 6 cm. **Calculate** the greatest number of tea boxes that can be put in the box.

- 1 Read the data on the box of milk then classify the data registered on it into descriptive data and quantitative data.

- a The descriptive data are
- b The quantitative data are



- 2 The opposite figure shows a model sheet to one of personal cards of a pupil in a school. Look at it well and then extract from it descriptive data and quantitative data.

Write your own personal data on this sheet.

A personal card of pupil

School name:
 Name:
 Grade:
 Class:
 School year:
 Birthday: / / 20.....
 Blood type:
 Tel house:
 mobile:

personal
photo

- 3 The following table is the model sheet of data base of the members who are participating in a sports club.

No.	The name	Age	The data of participating	favourite game	Blood species	The address	Telephone number
1							
2							
3							
4							

- a Determine which columns represent descriptive data and which ones represent quantitative data.
- b Consider yourself one of the members of this club and register your name from today and complete the data.

The kinds of statistics data

1 Choose the correct answer:

- a The quantitative data are the data written in form.
(description **or** favourite **or** numbers **or** symbols)
- b The following data are descriptive except (Sohag 2019)
(name **or** age **or** nationality **or** blood type)
- c is one of the quantitative data. (Ismailia 2018)
(The age **or** Blood species **or** Favourite colour **or** The birthplace)
- d The following data are quantitative except (Luxor 2019)
(age **or** height **or** weight **or** favourite food)
- e The following data are quantitative except (Ismailia 2019)
(age **or** length **or** favourite colour **or** weight)
- f Which of the following data are quantitative? (Beni Suef 2019)
(Favourite colour **or** Age **or** Blood species **or** Address)

2 Complete the following:

- a The kinds of statistics data are and (Ismailia 2018)
- b The favourite colour is from data. (Sohag 2019)
- c The favourite colour and the birthplace are from data. (Alex 2018)
- d Height, age and weight represent data. (Aswan 2018)

3 Read the data on the label, then classify them into descriptive data and quantitative data.

a The descriptive data are

b The quantitative data are

The Specialist Hospital Requisition for Medical Examination

Name:
Age:
Examination date: / / 20
Gender: ☐ male ☐ female
Birth date: / /
Birthplace:
Address:
Marital status:
Educational status:
Kind of disease:
Height:
Weight:
Temperature degree:
Blood species:

- 4 The following sheet shows a model of one of the forms of a hotel, study the form, **then complete**:

- a Descriptive data:
- b Quantitative data:
- c Register your name and **complete** the data.

Five-star Hotel	
Name :	.....
Address :	.....
ID number :	.....
Telephone :	.....
Guest room: Single	Double: <input type="checkbox"/>
Arrival date : / /
Departure date: / /
Signature:	.....

- 5 The opposite figure represents a membership card of a sports club.

Read the card carefully, then complete:

- a Descriptive data:
- b Quantitative data:

A sports club	
Name :	.....
Age :	.....
Sport :	.....
Membership no. :	.....

- 6 The following data are from the database of employees of a factory, read the data, then answer:

NO.	Name	Education	Age	Job	Experience	Telephone
1					
2					
3					

- a Determine the descriptive columns.
- b Determine the quantitative columns.

- 7 **Underline** the descriptive data and put a circle around the quantitative data. mobile number – blood species – address – the mark of the science test – students' names – home number – number of students in a class – your school name – your favourite sport.

- 1 The following table shows the distribution of the number of the foreign tourists in millions who visited Egypt in 2009 due to their nationalities.

Nationality	French	German	British	Russian	Italian	Total
Number of tourists in millions	0.8	1.2	1.34	2.35	1.04	6.73

- a What are the countries from which the most number of tourists visited Egypt? What is their percentage?
- b What are the countries from which the least number of tourists visited Egypt? How many tourists from these countries visited Egypt?
- c What is the number of German tourists? What is their percentage?

- 2 If the public score of 40 students in Arabic language in a university is as follows:

very good - good - pass - good - excellent - good - good - good
 very good - good - very good - good - good
 excellent - very good - excellent - excellent - pass
 good - good - very good - good - pass
 very good - very good - good - very good - pass - good - good
 very good - good - pass - very good - excellent
 pass - pass - excellent - good - pass

Form the tally frequency table. Then form the frequency table for the previous results, then answer the following questions:

- What is the most common score of the students?
- What is the least score of the students?
- What is your advice to the students in this important educational stage?

Collecting the descriptive statistics data

1 Choose the correct answer:

drawing	drawing	music	singing	acting	drawing
music	drawing	acting	reading	music	music
acting	singing	drawing	drawing	acting	drawing

- a The hobby which the most pupils prefer is
(music **or** singing **or** acting **or** drawing)
- b The hobby which is the least preferable is
(reading **or** acting **or** singing **or** drawing)
- c The hobby whose frequency is 2 is
(singing **or** reading **or** music **or** drawing)

2 The nationalities of a group of tourists in a hotel were recorded in the following table:

French	American	French	Japanese	Chinese	Russian	British	German
Russian	Italian	American	Russian	Japanese	French	Russian	Chinese
British	Japanese	British	Russian	American	French	Russian	German
American	Japanese	Japanese	French	Russian	Italian	American	French
Russian	Russian	Italian	Japanese	French	American	Italian	Japanese

- a Form the frequency table.
- b Complete each of the following:
- The country from which the most number of tourists came to Egypt is
The percentage = $(\frac{\text{.....}}{\text{.....}} \times 100) = \text{.....} \%$
 - The country from which the least number of tourists came to Egypt is
The percentage = $(\frac{\text{.....}}{\text{.....}} \times 100) = \text{.....} \%$
 - The number of the British tourists =
The percentage = $(\frac{\text{.....}}{\text{.....}} \times 100) = \text{.....} \%$
 - The number of the American tourists =
The percentage = $(\frac{\text{.....}}{\text{.....}} \times 100) = \text{.....} \%$



- 3** The following table contains the list of books in the library of a school that most students prefer to borrow:

Novel	Arts	Science	Poetry	Arts	Language	Poetry	Sociology
Novel	Science	Sociology	Language	Novel	Sociology	Philosophy	Sociology
Philosophy	Sociology	Language	Science	Sociology	Sociology	Science	Sociology
Arts	Science	Novel	Sociology	Philosophy	Poetry	Poetry	Novel
Language	Sociology	Novel	Novel	Science	Sociology	Language	Science
Poetry	Philosophy	Sociology	Poetry	Language	Science	Science	Language

- a Form the tally frequency table.
 b Form the frequency table.
 c Which books do most students prefer? Calculate their percentage.

- 4** The following table shows in millions the distribution of the number of the foreign tourists who visited Egypt in 2018 according to their nationalities:

Nationality	French	German	British	Russian	Italian	Total
Number of tourists in millions	0.7	2.3	1.45	3.46	2.14	10.05

- a What are the countries from which the most number of tourists visited Egypt? What is their percentage?
 b What are the countries from which the least number of tourists visited Egypt? What is their percentage?
 c What is the number of German tourists? What is their percentage?

- 5 Mohamed asked his friends in the class about their favourite colours, and then he recorded the results in the following table:

Red	Blue	Yellow	Blue	Red	Red	Green
Yellow	Yellow	Yellow	Green	Red	Blue	Green
Blue	Blue	Yellow	Green	Red	Blue	Green
Red	Green	Blue	Yellow	Red	Red	Yellow

- Form a tally frequency table.
- What is the colour that most students prefer? What's its percentage?
- Arrange the colours in descending order according to what most students prefer.

Cumulative Exercise

- 6 In a survey conducted to ask people to choose their favourite flavour of chips, the results were recorded in the following table:

Tomato	Cheese	Shrimp	Shrimp	Salt	Onion	Tomato	Onion
Salt	Cheese	Onion	Onion	Salt	Cheese	Shrimp	Salt
Onion	Salt	Cheese	Shrimp	Tomato	Shrimp	Onion	Salt
Cheese	Shrimp	Salt	Salt	Onion	Shrimp	Cheese	Shrimp
Salt	Tomato	Tomato	Cheese	Onion	Salt	Salt	Shrimp

Form a tally frequency table and the simple frequency table for these data, then answer the following questions:

- Which flavour do most people prefer? What's its percentage?
- Arrange the flavours in ascending order according to what most people prefer.

Think and Explore

- 7 The following table shows the amounts of fruits production on a farm in tons:

Fruits	Mango	Apple	Orange	Banana	Watermelon	Total
Weight in tons	15	21	24	26	14	100

- What is the most produced fruit?
- What is the least produced fruit?
- What is the weight of watermelon in kilograms? What's its rank among the fruits if they are arranged in ascending order according to productivity?
- What is the weight of banana in kilograms? And what's its percentage?



- 1 In a competition of an acceptance exam, for joining a sports college, the heights of 48 students who participated on the competition in cm were as follows:

175 - 183 - 163 - 181 - 164 - 195 - 182 - 166 - 193 - 195 - 185 - 157 -
190 - 166 - 158 - 163 - 173 - 166 - 177 - 164 - 157 - 173 - 193 - 168 -
183 - 155 - 178 - 173 - 180 - 164 - 181 - 156 - 194 - 173 - 187 - 162
- 176 - 158 - 170 - 168 - 190 - 156 - 169 - 155 - 170 - 188 - 155 - 192

From the frequency table of sets to the previous heights, then answer the following questions.

- What is the number of students who have the highest heights?
What is their percentage?
- What is the number of students whose heights are less than 165 cm?
What is the percentage?
- What is your advice to those students?

- 2 The following frequency table of sets shows the shares of money in pound hold by the pupils of a class in the project of building a hospital near to the school. Study it and answer:

The shares in pounds	20–	30–	40–	50–	60–	70–	Total
Number of pupils	3	6	8	12	7	4	40

- What is the number of pupils who shared with an amount of money between 40 and 50 pounds? What is their percentage?
- What is the number of pupils who shared with the least amount of money? What is their percentage?
- What is the number of pupils who shared with an amount of money = 60 pounds and more? What is their percentage?

Collecting the quantitative statistics data

1 Choose the correct answer:

- a The range =
(maximum + minimum **or** maximum \div minimum **or** minimum - maximum **or** maximum - minimum)
- b The number of sets =
(the length of the set - the range **or** the range - length of the set **or** the range \div length of the set)
- c If the values of a frequency distribution lie between (30, 60), then the range of this distribution = (30 **or** 60 **or** 90 **or** 20)
- d The range of the set of values 50, 60, 35, 25, 20
(20 **or** 30 **or** 40 **or** 60) (Beheira 2020)

2 Complete the following:

- a If we divide the data into the sets (0 - , 5 - , 10 - ,), then the length of each set =
- b If the marks of six students in one exam are 29, 33, 57, 40, 36 and 49, then the range = (Luxor 2019)
- c If the range of a frequency distribution is 34 and the lowest value is 45, then the highest value is
- d If 95 is the maximum value in a given data and the range of these data equals 48, then the minimum value in these data is
- e If the range of some values = 50 and the number of sets = 10, then the length of set = (Cairo 2020)

- 3 During a school trip to a factory of clothes two pupils of the school, Heba and Shrouk collected data about the weekly wages of the workers, the number of workers was 50 persons. Heba and Shrouk registered these data in a frequency table of sets as follows:

The weekly wages in L.E	500-	600-	700-	800-	900-	1000-	1100-	Total
The number of workers	4	7	12	6	11	5	5	50

Read the table well, then complete the following questions:

- a The least weekly wage which a worker gets is
- b The weekly wage which the maximum number of workers obtain lies between and and their percentage is %.



- c) The percentage of the number of workers who obtain the least weekly wage is
- d) The number of workers whose weekly wages are L.E. 1000 and more is and its percentage is %.

4 The following table shows the grades of 30 students in a maths test:

25	35	40	20	30	37	40	33	22	38
35	36	28	37	39	28	32	26	29	37
23	34	35	36	29	38	40	35	37	31

a) **Form** the frequency table of sets for the previous data. (Using the sets 20 – , 25 – ,).

b) **Find** the number of excellent students, if the least grade required to be an excellent student is 35.



5 The following table shows the number of vacation days that 40 workers have during a year:

11	27	14	25	13	28	14	26	30	15
29	21	17	21	22	15	16	21	16	24
26	15	20	20	24	30	20	15	21	26
15	30	28	22	26	22	27	20	30	29



a) **Form** the frequency table of sets. (Use the sets 10–, 15– ,)

b) **Find** the number of workers who have vacation days equal to 20 days and less than 25 days during a year.

6 A sports club measured the heights of 100 members and registered them in this table:

Height in cm	145–	150–	155–	160–	165–	170–	175–	Total
The number of members	8	14	15	18	17	16	12	100

From the previous table, complete each of the following:

a) The number of members who are shorter than 160 cm = members
Their percentage = ($\frac{\text{.....}}{100} \times 100$) = %.

b) The number of members who are 170 cm tall and more = members
Their percentage = ($\frac{\text{.....}}{100} \times 100$) = %.

- 7 A maths teacher measured the heights of 50 students in cm, then registered it in the following table:

Height in cm	140–	150–	160–	170–	Total
Frequency	12	23	10	5	50



Answer the following questions:

- What is the number of students who are shorter than 170 cm?
What is their percentage?
- What is the number of students who are 150 cm and more?
What is their percentage?

Cumulative Exercise

- 8 In a competition for passing the admission test to a sports college, the weights of 40 students attended this competition were as follows:

50	53	75	88	65	77	59	66	63	85
64	72	58	65	56	74	73	90	92	87
60	70	72	85	56	54	75	76	90	81
60	88	74	72	60	57	66	83	51	60

- Form the frequency table of sets for the previous weights.
(Use the sets 50–, 60–,)
- What is the number of the students who have the greatest weight?



Think and Explore

- 9 The following table shows the number of infected persons by COVID-19 and their ages in a village in thousands:

Age in year	10 –	20 –	30 –	40 –	50 –	Total
No. of persons	1	2	1	3	5	12

- What's the percentage of the number of the infected persons whose age is 40 years and more?
- What do you advise them?

- 1 The following table shows the extras money which 100 workers got in a month in a factory, they are as follows:

The extra money	20 –	30 –	40 –	50 –	60 –	70 –	Total
Number of workers	10	15	25	30	15	5	100

- a What is the number of workers who obtained extra money less than 50 pounds?
- b Draw the frequency curve of this distribution.
- 2 In a goodness party for orphan's day, a group of contributors paid sums of money in pounds as shown in the following table.

The sum	50 –	60 –	70 –	80 –	90 –	100 –	110 –
Number of contributors	5	7	10	12	10	7	5

- a What is the number of contributors by L.E 80 and more?
- b Represent the previous data by the frequency curve.
- 3 The following table shows the marks of 100 students in one month in math:

Marks	20 –	30 –	40 –	50 –	Total
Number of students	15	30	40	15	100

- Draw the frequency curve for this distribution.

Representing the statistics data by the frequency curve

1 The following table shows the heights of 120 students in centimetre:

Height in cm	140 –	144 –	148 –	152 –	156 –	160 –	Total
Number of students	12	20	36	24	16	12	120

First draw the frequency curve, then answer the following questions:

- What is the percentage of students who are shorter than 148 cm?
- What is the percentage of students who are 152 centimetres or taller than 152 cm?
- What is the number of students who are taller than or equal to 144 cm and shorter than 156 cm? Calculate their percentage.

2 The following table shows the number of vacation days for employees in a factory:

Vacation days	4 –	8 –	12 –	16 –	20 –	24 –	28 –	Total
Frequency	6	7	10	.....	9	7	5	60

Complete the table.

- What is the number of employees who have less than 12 vacation days? Calculate their percentage.
- What is the number of employees who have 20 vacation days or more? Calculate their percentage.
- Draw the frequency curve for the previous data.

3 The following frequency table represents the daily wages in pounds for a sample formed from 47 workers in a factory:

Wages	10 –	20 –	30 –	40 –	50 –	60 –	Total
Number of workers	3	6	10	15	8	5	47

- Draw the frequency curve for this distribution.
- How many workers whose daily wages are 40 pounds or more?

- 4 The following table shows the number of hours which the pupils of a class spend daily in front of the computer:

Number of hours	1 –	2 –	3 –	4 –	5 –	6 –	Total
Number of pupils	7	11	15	6	4	2	45

Represent these data by the frequency curve.

(Gharbia 2020)

- 5 The following table shows the daily hours of studying for 50 students:

Number of hours	2 –	4 –	6 –	8 –	10 –	Total
Number of students	8	9	15	13	.....	50

- a Complete the table.
b Draw the frequency curve for the previous data.

- 6 The following table shows the marks of 100 students in a month in maths exam:

Marks	10 –	20 –	30 –	x –	50 –	Total
Number of students	10	15	25	35	15	100

- a Find the value of x .
b What is the number of students who got 30 marks and more?

(Cairo 2012)

- 7 The following table shows what 30 pupils save in a week in pounds:

Amount of money	10 –	20 –	30 –	40 –	50 –	Total
Number of pupils	3	5	9	8	5	30

- a Draw the frequency curve of this distribution.
b How many pupils are saving less than 40 pounds?

(Giza 2019)

Cumulative Exercise

- 8** The following table represents the daily income of 40 persons in pounds:

The daily income	30 –	40 –	50 –	x –	70 –	Total
Number of persons	5	8	y	9	7	40

- a Find the value of x and y .
- b Represent these data by the frequency curve.
- c What is the percentage of the number of persons who get 60 pounds and more daily?

Think and Explore

- 9** Ola and Nargis registered the temperature degrees which are expected for 30 cities in one of the days of summer through watching the news on television. They formed the following frequency table:

Temperature degree	24 –	28 –	32 –	36 –	40 –	44 –	Total
Number of cities	3	4	7	9	5	2	30

Draw the frequency curve for the previous table, then answer the following questions:

- a What is the number of cities whose temperature degrees are 40 degrees and more? What do you advice these cities inhabitants?
- b What is the number of cities which are suitable for summer season on that day?
- c What is the number of cities whose temperature degrees are mild on that day from your own view?

General Exercises

(From the School Book)

- 1 Examine each of the front envelope page of mathematic book and the last page of the art features of the book, then extract from them at least three descriptive data and another three quantitative data.

.....

.....

.....

- 2 In a competition hold by a sports teacher for jumping in the place. The number of jumps carried out by the pupils of a class were as follows.

30 - 18 - 21 - 25 - 14 - 19 - 7 - 8 - 11 - 26 - 22 - 16 - 17 - 35 - 33 - 16 - 27 -
6 - 30 - 26 - 16 - 21 - 14 - 20 - 18 - 9 - 15 - 31 - 21 - 18 - 15 - 29 - 26 -
12 - 28 - 9 - 25 - 8 - 10 - 15 - 36 - 23

- a Form the frequency table of sets for the previous jumps.
- b Represent these data using the frequency curve.
- c Answer the following questions.

- 1 What is the number of students who made the most number of jumps? What is their percentage?

.....

.....

- 2 What is the number of students who made the least number of jumps? What do you advice those pupils?

.....

.....

- 3 The following table shows the number of air flights which done in Cairo airport in the period from 12 at noon till 8 in the morning of the next day.

Time	12 p.m –	4 p.m –	8 p.m –	12 a.m –	4 a.m –	Total
Number of fights	32	41	42	19	13	147

- Represent these data by frequency curve, then answer the following questions:

a In what time is the Cairo airport the most crowded? why?

.....

.....

b In what time is the Cairo airport the least crowded?

.....

.....

c What is the percentage of the number of flights coming to Cairo airport in the period from 12 at noon till 4 p.m?

.....

.....

d What is the percentage of the number of flights coming to Cairo airport after 12 a.m?

.....

.....

Worksheet 1 on Lesson (1) - Unit (1)

Total mark

25

1 Choose the correct answer:

a) $\frac{1}{2} : \frac{1}{5} = \dots : \dots$

(2 : 5 or 5 : 2 or 1 : 10 or 1 : 1)

b) $6 : 12 = \frac{\dots}{2}$

(6 or 3 or 4 or 1)

c) The side length of a square : its perimeter = $\dots : \dots$

(1 : 3 or 3 : 1 or 1 : 4 or 4 : 1)

d) $3.2 : 9.6 = \dots : \dots$ (in the simplest form) (32 : 96 or 1 : 3 or 3 : 1 or 3 : 6)

e) If the number of boys in a class = $\frac{1}{2}$ the total number of pupils in the class, then

the number of boys : the number of girls = $\dots : \dots$

(1 : 2 or 1 : 4 or 2 : 1 or 1 : 1)

2 Complete the following:

a) $38 : 190 = \dots : \dots$

(in the simplest form)

b) $5.25 : 7\frac{7}{8} = \dots : \dots$

(in the simplest form)

c) The ratio between the diameter of a circle and its circumference = $\dots : \dots$

d) $500 : 700 = \dots : \dots$

(in the simplest form)

e) $1.5 : 3 = \dots : \dots$

(in the simplest form)

3 Find the following ratios in their simplest forms:

a) $\frac{6.4}{16}$

b) $1\frac{1}{2} : 1\frac{1}{4}$

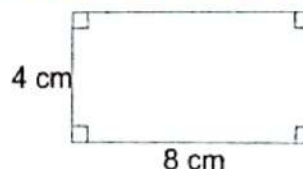
c) $\frac{3}{8} : 2\frac{1}{4}$

d) $0.5 : 6.5$

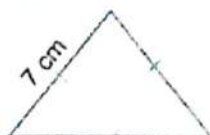
4 A rectangle, its length is 8 cm and its width is 4 cm, find:

a) Its length : its width.

b) Its perimeter : its length.



5 By using the following figures, find the ratio between the perimeter of the triangle and the perimeter of the square.



Worksheet 2 on Lesson (1) - Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) The ratio between the perimeter of any equilateral triangle and its side length =
(1 : 4 or 2 : 4 or 1 : 3 or 3 : 1)
- b) $1\frac{1}{4} : 1.75 = \dots$
($\frac{4}{7}$ or $\frac{2}{7}$ or $\frac{7}{5}$ or $\frac{5}{7}$)
- c) $7 : \frac{1}{3} = \dots : \dots$
(21 : 1 or 1 : 21 or 7 : 3 or 3 : 7)
- d) The circumference of the circle : its radius length = :
($\pi : r$ or $2\pi : 1$ or $1 : \pi$ or $1 : 2\pi$)
- e) $\frac{2}{5} : \frac{5}{9} = \dots : \dots$
(18 : 25 or 5 : 9 or 2 : 9 or 25 : 18)

2 Complete the following:

5

- a) The ratio between the side length of a square and its perimeter =
- b) If the length of a rectangle is 6 cm and its area is 24 cm^2 , then the ratio between its perimeter and its length is :
- c) $2.4 : 2\frac{2}{5} = \dots : \dots$ (in the simplest form)
- d) $3 : 4\frac{3}{4} = \dots : \dots$ (in the simplest form)
- e) $\frac{15}{85} = \dots : \dots$ (in the simplest form)
- 3 If the side length of a square is 8 cm and the dimensions of a rectangle are 2 cm and 4 cm, **find** the ratio between the area of the square and the area of the rectangle.
.....
.....
- 4 If Rasha has L.E. 80 and her brother Akram has L.E. 105, **find the ratio between what Rasha has and what Akram has.**
.....
.....
- 5 If the area of a triangle is 24 cm^2 and the length of its base is 8 cm, **find the ratio between the base length of the triangle and its height.**
.....

Worksheet 3 on Lesson (2) - Unit (1)

Total mark

25

1 Choose the correct answer from those between brackets:

5

- a) 8 hours : $3\frac{1}{3}$ days = : (8 : 3 or 1 : 10 or 3 : 8 or 10 : 1)
- b) 900 kg : 1 ton = : (1 : 9 or 90 : 1 or 9 : 1 or 9 : 10)
- c) 0.7 litre : 350 mL = : (1 : 2 or 7 : 35 or 2 : 1 or 7 : 13)
- d) 2.25 feddans : 16 kirats = : (3 : 2 or 27 : 8 or 8 : 27 or 2 : 3)
- e) 3 years : 18 months = : (2 : 1 or 1 : 2 or 3 : 9 or 18 : 1)

2 Complete the following:

5

- a) The ratio between 250 piasters and $7\frac{1}{2}$ pounds equals (in the simplest form)
- b) 3000 gm : 5 kg = : (in the simplest form)
- c) 25 seconds : $\frac{1}{3}$ minute = : (in the simplest form)
- d) 10 kirats : $1\frac{1}{4}$ feddans = : (in the simplest form)
- e) 50 days : 2 months = : (in the simplest form)

3 Find the ratio between each of the following in the simplest form:

5

- a) $2\frac{1}{4}$ m : 125 cm b) 10 weeks : 25 days
- c) 150 grams : a quarter of a kilogram d) 2 kirats and 18 sahms

4 The perimeter of a rectangle is 6.4 m and its width is 120 cm. Find the ratio between its length and its width.

5

5 Find the ratio between the circumference of a circle whose radius is 105 mm and the perimeter of a square whose side length is 7.5 cm.

5

 $(\pi \approx \frac{22}{7})$

Worksheet 4 till Lesson (2) - Unit (1)

Total mark

25

1 Choose the correct answer from those between brackets:

5

- a) 6 kirats : 18 sahms = : (2 : 9 or 3 : 8 or 18 : 2)
- b) 1.8 m : 30 cm = : (30 : 18 or 1 : 3 or 6 : 1 or 1 : 6)
- c) $3\frac{1}{2}$ L : 2500 mL = : (3 : 500 or 7 : 5 or 25 : 3 or 5 : 7)
- d) 225 P.T. : L.E. 10 = : (9 : 40 or 40 : 9 or 25 : 9 or 10 : 5)
- e) 8 hours : $3\frac{1}{2}$ days = : (3 : 8 or 2 : 21 or 8 : 3 or 21 : 2)

2 Complete the following:

5

- a) 2500 kg : 1.75 tons = : (in the simplest form)
- b) The area of a rhombus = \times \times
- c) The ratio between two numbers = $\frac{\text{.....}}{\text{.....}}$
- d) The ratio between the side length of an equilateral triangle and its perimeter is
- e) 2 km : 400 m = : (in the simplest form)

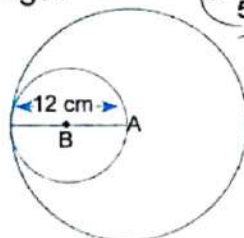
3 Put the following ratios in their simplest forms:

5

- a) 630 P.T. : L.E. 9
- b) $\frac{1}{2}$ km : 250 m
- c) 5 weeks : 30 days
- d) $1\frac{1}{2}$ tons : 600 kg

4 By using the opposite figures, find the ratio between the radius length of the larger circle A and the radius length of the smaller circle B.

5



5 Laila is 1.2 m tall and her mother is 180 cm tall, find the ratio between the height of Leila and the height of her mother.

5

7

Worksheet 5 on Lesson (3) - Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) If $a : b = 5 : 3$ and $a - b = 8$, then $b =$ (8 or 6 or 12 or 10)
- b) If the ratio between the side lengths of a blue square and a red square is $3 : 5$ and their sum is 64 cm, then the side length of the blue square is (32 or 36 or 42 or 24)
- c) The perimeter of a rectangle is 320 cm, the ratio between its length and width is $3 : 2$ so, its width is (64 cm or 52 cm or 96 cm or 64 cm²)
- d) If $5x = 25$, then $x =$ (3 or 5 or 6 or 8)
- e) The sum of two amounts of money is L.E. 60 and the ratio between them is $3 : 2$, then the smallest amount is L.E. (36 or 24 or 72 or 12)

2 Complete the following:

5

- a) If the ratio $7 : 13$ is the same ratio as $x : 52$, then $x =$
- b) The ratio between two numbers is $3 : 7$. If the first number is 12, then the second number is
- c) If the ratio between the age of Karim and the age of his father is $3 : 5$ and the difference between their ages is 20 years, then the age of Karim = years.
- d) A rectangular piece of land of perimeter 66 cm, if the ratio between its width and its length is $5 : 6$, then its area is
- e) If the ratio between the areas of two pieces of land is $5 : 9$ and the area of the first piece is 130 m², then the area of the other piece of land is

- 3 If the ratio between the number of girls and the number of boys in a school is $3 : 7$ and the difference between their numbers is 80 pupils, then find the number of girls.

- 4 If the ratio between the measures of the two acute angles in a right-angled triangle equals $7 : 11$, find their measures.

- 5 The ratio between the heights of two buildings is $5 : 9$. If the height of the first building is 15 m, find the height of the second building.

Worksheet 6 till Lesson (3) - Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) If $3x = 24$, then $x : 24 = \dots : \dots$ (1 : 3 or 1 : 24 or 24 : 1 or 3 : 1)
- b) 2 km : 800 m = $\dots : \dots$ (1 : 4 or 1 : 2 or 4 : 1 or 5 : 2)
- c) 2.5 : 5.75 $\dots : \dots$ (10 : 23 or 23 : 1 or 5 : 15 or 25 : 5)
- d) If $6x = 24$, then $x = \dots$ (6 or 24 or 4 or 3)
- e) The ratio between the diameter of a circle to its circumference is \dots
($r : 2\pi$ or $2r : 2\pi$ or $1 : \pi$ or $2\pi : r$)

2 Complete the following:

5

- a) The ratio between two numbers is 2 : 7, if the first number is 16, then the second number = \dots
- b) $6\frac{2}{3} : 4.5 = \dots$ (in the simplest form)
- c) 150 mL : $\frac{1}{4}$ L = \dots (in the simplest form)
- d) The ratio between the ages of two pupils is 3 : 4 and the difference between their ages is 3 years, then the age of the older is \dots years.
- e) 18 kirats : $\frac{1}{2}$ feddans = $\dots : \dots$ (in the simplest form)

- 3 Find the simplest form of the ratio between the circumference of the circle whose radius length is 14 cm and the perimeter of the square whose side length is 8 cm.

5

- 4 The ratio between two numbers is 7 : 12, find the two numbers if their sum is 76.

5

- 5 The ratio between the lengths of two roads is 2 : 5 and the difference between their lengths is 21 km, find the length of each road.

5

Worksheet 7 on Lesson (4) - Unit (1)

Total mark

25

1 Choose the correct answer:

5

- a) $\frac{1}{2} : \frac{1}{3} : \frac{1}{4} = \dots : \dots : \dots$ (2 : 3 : 4 or 4 : 3 : 2 or 6 : 4 : 3 or 4 : 6 : 3)
- b) 1 kg : 200 gm : 700 gm = $\dots : \dots : \dots$ (1 : 2 : 7 or 10 : 2 : 7 or 7 : 2 : 1 or 1 : 7 : 2)
- c) If $a = \frac{1}{2}b$, $b = \frac{1}{3}c$, then $a : c = \dots : \dots$ (1 : 3 or 3 : 1 or 1 : 6 or 6 : 1)
(in the simplest form)
- d) $0.32 : 6.4 : 8 = \dots : \dots : \dots$
(4 : 8 : 1 or 4 : 80 : 100 or 1 : 20 : 25 or 1 : 2 : 4)
- e) $\frac{1}{8}$ day : 6 hours : $1\frac{1}{2}$ days = $\dots : \dots : \dots$
(1 : 2 : 12 or 2 : 1 : 12 or 1 : 1 : 12 or 2 : 2 : 12)

2 Complete the following:

5

- a) $a : c = 4 : 5$ and $b : c = 3 : 8$, then $a : b : c = \dots : \dots : \dots$
- b) If the ratio between the measures of the angles of a triangle is 1 : 2 : 3, then the measure of the smallest angle equals \dots
- c) If $A = \frac{3}{4}B$, then $B : A = \dots : \dots$
- d) If the perimeter of a rectangle is 36 cm and the ratio between the length and the width is 3 : 1, then the length = \dots cm.
- e) $\frac{2}{3} : \frac{4}{6} : \frac{8}{12} = \dots : \dots : \dots$ (in the simplest form)

3 Find the ratio between each of the following in the simplest form:

5

- a) If $A : B = 3 : 5$, $B : C = 5 : 7$, then $A : C = \dots : \dots$
- b) $\frac{1}{5} : 0.5 : 0.75 = \dots : \dots : \dots$
- c) 3 feddans : 12 kirats : $1\frac{1}{2}$ feddans = $\dots : \dots : \dots$
- d) If x , y and z are three numbers, the ratio between $x : y = 3 : 4$ and the ratio between $y : z = 2 : 3$ the $x : y : z = \dots : \dots : \dots$

4 In the triangle ABC, $AB : BC : AC = 6 : 5 : 3$ and BC exceeds AC by 8 cm, find the perimeter of triangle ABC.

5

5 If the height of Noha : the height of Mai = 2 : 3 and the height of Mai : the height of Sara = 6 : 7, then the height of Noha : the height of Sara = $\dots : \dots$

5

Worksheet 8 till Lesson (4) - Unit (1)

Total mark

25

1 Choose the correct answer:

- a) The ratio $15 : 45 = \dots\dots\dots$ (as a fraction in the simplest form) ($\frac{15}{45}$ or $\frac{70}{15}$ or $\frac{15}{70}$ or $\frac{1}{3}$)
- b) $120 \text{ minutes} : 1.5 \text{ hours} = \dots\dots : \dots\dots$ (in the simplest form)
($3 : 4$ or $80 : 1$ or $4 : 3$ or $12 : 15$)
- c) If $\frac{x}{8} = \frac{6}{16}$, then $x = \dots\dots$ (3 or 4 or 1 or 2)
- d) $7 : 9 = 14 : \dots\dots\dots$ (16 or 9 or 6 or 18)
- e) If $3x = 24$, then $x : 24 = \dots\dots : \dots\dots$ ($1 : 3$ or $1 : 24$ or $24 : 1$ or $3 : 1$)

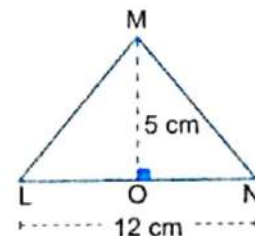
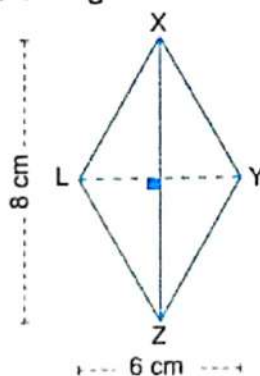
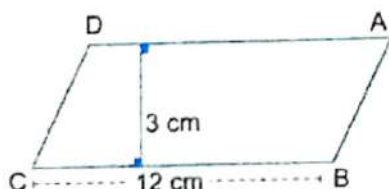
2 Complete the following:

- a) If $A : B = 3 : 4$ and $B : C = 4 : 5$, then $A : B : C = \dots\dots\dots$
- b) The ratio between the side length of a rhombus and its perimeter = $\dots\dots : \dots\dots$
- c) If $\frac{x}{3} = \frac{9}{10}$, then $x = \dots\dots\dots$
- d) The sum of three numbers is 45 and the ratio among them is $2 : 3 : 4$, then the smallest number is $\dots\dots\dots$
- e) $2.25 \text{ feddans} : 16 \text{ kirats} = \dots\dots : \dots\dots$ (in the simplest form)

- 3 The ratio between Heba's money : Mohammed's money : Basma's money is $7 : 5 : 6$, if the sum of Heba's money and Mohammed's money is 3600 pounds.

Find the amount of money of each of them.

- 4 Find the ratio among the area of the parallelogram ABCD, the area of the rhombus XYZL and the area of the triangle LMN in the simplest form.



- 5 If the ratio between the measures of the angles of a triangle is $2 : 3 : 4$, find the measure of the greatest angle of this triangle.

Worksheet 9 on Lesson (5) - Unit (1)

Total mark

25

1 Choose the correct answer:

- a) Rasha spent L.E. 70 in 5 day, then the rate of money she spent in one day was L.E./day. (18 or 5 or 14 or 19)
- b) A car covers 88 km in 4 hours, then its speed is km/hour. (12 or 9 or 22 or 17)
- c) If a water tap leaks 36 litres of water in 4 hours, then the rate of leakage litres/hour. (12 or 8 or 9 or 4)
- d) A train covers 120 km in 2 hours, then its speed is km/hour. (20 or 90 or 60 or 3)
- e) If a printer prints 90 sheets of paper within 6 minutes, then the rate of printing is sheets/minute. (15 or 60 or 9 or 6)

2 Complete the following:

- a) A tractor ploughs 20 feddans within 5 hours, then the rate of performance of this tractor = feddans/hr.
- b) A machine produces 81 metres of cloth in 9 hours, then its rate of production = metres/hour.
- c) A ship consumes 75 litres of fuel to cover a distance of 15 km. Calculate the rate of fuel consumption of this ship = litres/km.
- d) If a factory produces 176 candles in 8 hours, then the rate of production of this factory is candles/hour.
- e) A worker paints 30 m^2 in 5 hours, then his rate of work = m^2/hour .

- 3 A car consumes 30 litres of benzene to cover 210 km. **How many litres of benzene does the car consume to cover 420 km?**

- 4 A water tap leaks 30 litres of water in 5 hours. **Find the rate of water leakage per hour.**

- 5 A car covers 360 kilometres in 4 hours. **Calculate the speed of this car.**

Worksheet 10 till Lesson (5) - Unit (1)

Total mark

25

5

1 Choose the correct answer:

- a) An irrigation machine irrigates 35 feddans in 7 hours, then the rate of work for this machine is feddans/hour. (3 or 5 or 10 or 15)
- b) 125 piastres : 5 pounds = : (is the simplest form) (4 : 1 or 1 : 4 or 25 : 1 or 1 : 25)
- c) If $a : b = 3 : 2$, $c : b = 3 : 4$, then $a : c = \dots : \dots$. (3 : 6 or 4 : 4 or 4 : 3 or 2 : 1)
- d) The ratio between 18 kirats and $1\frac{1}{2}$ feddans = : (1 : 3 or 2 : 1 or 1 : 2 or 9 : 24)
- e) If Hazem drinks 21 glasses of milk weekly, then the rate of what he drinks. is glasses/day. (3 or 7 or 14 or 20)

2 Complete the following:

5

- a) If the sum of two numbers is 140 and the ratio between them is $\frac{3}{4}$, then the smallest number =
- b) If a tractor ploughs 6 feddans in 3 hours, then the rate of its performance =
- c) The rate is
- d) The ratio is
- e) 0.5 km : 700 m : 900 m = (in the simplest form)

3 Find the area of the rectangle whose perimeter is 30 cm and the ratio between its dimensions is 3 : 2.

5

4 The area of a rectangle equals 96 cm². If its width equals 8 cm, calculate the ratio between the length of the rectangle and its perimeter.

5

5 If the ratio between the height of a building and a tree is 8 : 3 and the height of the tree is 12 m, find the height of the building.

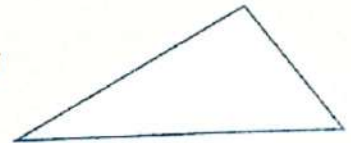
5

School Book Unit Test

- 1 In an exam of mathematics in one class the ratio among the weak pupils to those who succeeded to the excellent pupils was 1 : 4 : 1. If the number of all pupils in the class was 30 pupils, **calculate** the number of pupils who succeeded and the number of weak pupils.
-

- 2 The ratio between the lengths of the sides of a triangle is 2 : 3 : 4.

If the perimeter of the triangle is 54 cm, **find the length of each side of the triangle.**



- 3 A ship for transporting goods among the countries consumes 25 litres of fuel to cover a distance 15 km. **Calculate** the rate of consumption of fuel.
-
-

- 4 **Complete try getting the ratio in each of the following cases:**

a) $250 \text{ gm} : \frac{1}{2} \text{ kg} = \dots : \dots$

b) 16 kirats : 1 feddan = $\dots : \dots$

c) $2\frac{1}{2} \text{ m} : 125 \text{ cm} = \dots : \dots$

d) 8 hours : $3\frac{1}{3} \text{ days} = \dots : \dots$

- 5 If the ratio between the height of Khalid to the height of Ahmed is 2 : 3 and the ratio between the height of Ahmed to the height of Hany is 4 : 5 **Calculate** the ratio between the height of Khalid to that of Hany.
-
-

Al-Adwaa Unit Test

Total mark

25

5

1 Choose the correct answer:

- a) $\frac{1}{3} : \frac{1}{4}$ (3 : 4 or 4 : 3 or 3 : 12 or 1 : 1)
- b) The perimeter of a square : its side length = : (1 : 4 or 1 : 1 or 4 : 1 or 1 : 3)
- c) If 200 grams of chocolate give 600 calories, then the number of calories found in 60 grams of the same chocolate is calories. (180 or 200 or 36000 or 30)
- d) If $\frac{4}{8} = \frac{12}{x}$, then $x =$ (8 or 16 or 32 or 24)
- e) The ratio between 2 feddans : 64 kirats equals (2 : 64 or 3 : 4 or 4 : 3 or 32 : 1)

2 Complete the following:

- a) $2\frac{1}{2}$ m : 150 cm = :
- b) An irrigation machine irrigates 49 feddans in 7 hours, then the rate of work for this machine is feddans/hour.
- c) If the difference between two numbers is 18 and the ratio between them is $\frac{5}{14}$, then the greatest number =
- d) If Hany drinks 14 glasses of milk weekly, then the rate of what he drinks daily is glasses/day.
- e) The ratio 6 : 11 is the same as $x : 33$, then $x =$

3 The ratio between three angles of a triangle is 1 : 2 : 3. Find the measures of the three angles.

4 If the number of students in a class in grade six is 35 students. If the number of boys in the class = $\frac{3}{4}$ the number of girls, find the number of the boys and girls.

5 A factory produces 8400 cans in 14 hours. Calculate:

- a) The rate of production per hour.
- b) The number of the produced cans in 18 hours.

Worksheet 11 on Lesson (1) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

a) is an equality of two or more ratios (proportion **or** multiplying **or** probability)

b) $\frac{2}{10} = \frac{\dots}{5}$ (2 **or** 4 **or** 1)

c) $\frac{3}{15} = \frac{1}{\dots}$ (3 **or** 4 **or** 5)

d) $\frac{49}{\dots} = \frac{7}{14}$ (2 **or** 98 **or** 90)

e) $\frac{7}{4} = \frac{35}{\dots}$ (5 **or** 20 **or** 25 **or** 30)

2 Complete each of the following:

5

$\times 3$	2	(b)	1	4	(e)	$\div 3$
	(a)	9	(c)	(d)	27	

3 Find $(X + Y) - Z$

5

$\times 5$	3	4	Z	$\div 5$
	X	Y	10	

4 Find the value of x, y for each of the following:

5

a) $\frac{3}{15} = \frac{x}{5} = \frac{9}{y}$

b) $\frac{7}{9} = \frac{21}{y} = \frac{x}{45}$

5 Find $(a + b) \times (c - d)$

5

$\times 2$	4	1	b	10	d	$\div 2$
	8	a	6	c	24	

Worksheet 12 on Lesson (1) - Unit (2)

Total mark

25

1 Choose the correct answer:

$\times 10$	1	9	b	c	3	$\div 10$
	10	a	200	40	d	

5

a) $a = \dots\dots\dots$

(90 or 9 or 900 or 0.9)

b) $b = \dots\dots\dots$

(2 or 20 or 200 or 0.2)

c) $c = \dots\dots\dots$

(40 or 400 or 4 or 0.4)

d) $d = \dots\dots\dots$

(30 or 3 or 0.3 or 300)

2 Complete the following:

5

a) $\frac{\dots}{30} = \frac{5}{25}$

b) $\frac{4}{36} = \frac{\dots}{27} = \frac{1}{\dots}$

c) $\frac{8}{24} = \frac{6}{\dots} = \frac{\dots}{3}$

d) $\frac{2}{\dots} = \frac{9}{72} = \frac{1}{\dots}$

3 Find: $(N + F) - M$

5

$\times 9$	1	M	18	N	$\div 9$
	9	81	F	900	

4 Find the value of a, b in each of the following:

5

a) $\frac{18}{9} = \frac{6}{a} = b$

b) $7 = \frac{49}{a} = \frac{b}{2}$

5 Find: $(X + Y + Z) - F$

5

$\times 6$	2	4	Y	Z	I	$\div 6$
	12	X	36	54	F	

Worksheet 13 on Lesson (2) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

a) $\frac{5}{6} = \frac{10}{\dots}$

(6 or 10 or 5 or 12)

b) $\frac{6}{\dots} = \frac{10}{3}$

(18 or 1.8 or 0.18 or 180)

c) $\frac{2}{7} = \frac{x}{21}$, then $x = \dots$

(7 or 2 or 6 or 8)

d) If $\frac{x}{y} = \frac{w}{z}$, then $w y = \dots$

(z x or z y or z w or w t z)

2 Complete each of the following:

5

a) If 9, 21, 3 and b are proportional numbers, then $b = \dots$

b) If $\frac{4}{x} = \frac{2}{y}$, then $4 Y = \dots$

c) If $3 : 4 = 9 : Y$, then $Y = \dots$

d) If $\frac{x+2}{3} = 2$, then $x = \dots$

3 Find the value of x in each of the following:

5

a) If $\frac{16}{8} = \frac{2}{x}$, then $x = \dots$

b) If $\frac{0.18}{0.17} = \frac{x}{34}$, then $x = \dots$

4 If 15 kg of banana cost 150 pounds, what is the cost of 44 kg of banana?

5

5 A bus travels 200 km in 50 minutes, how far can it travel in 70 minutes?

5

Worksheet 14 till Lesson (2) - Unit (2)

Total mark

25

1 Choose the correct answer:

a) The fourth proportional of 3, 4, 5 is

(6 or $7\frac{2}{3}$ or $6\frac{2}{3}$ or 7)b) If the numbers 3, y, 4 and 8 are proportional, then $y =$ (5 or 6 or 7 or 8)c) If 7 chocolate bars weigh 700 gm, then the weight of 3 chocolate bars = gm.
(0.3 or 30 or 3 or 300)d) If $\frac{2x+20}{4} = 25$, then $x =$
(40 or 80 or 100 or 120)

2 Complete the following:

a) If $x + 1$, 5, 6, 2 are proportional, then $2x =$

b) The proportion is

c) The product of means = the product of

d) If $\frac{x+2}{8} = \frac{3}{4}$, then $x =$

3 The price of 12 litres of milk is L.E. 102. Find:

a) The price of 25 litres of this milk.

b) The number of litres of price L.E. 348.5

4 Find each of the following:

a) If $\frac{3}{8} = \frac{x}{16} = \frac{y}{4}$, then find $x - y$.b) Find the value of x if the following numbers are proportional 2, 9, 4, $(x - 1)$.

5 A building of 15 metres height casts a shadow of 5 metres, find the height of a tree that casts a shadow of 1 metre at the same time.

1 Choose the correct answer:

- a) = $\frac{\text{length of drawing}}{\text{length in reality}}$ (Unit scale **or** Drawing scale **or** Reality scale)
- b) If the drawing scale < 1 , this expresses
(minimization **or** enlargement **or** equality)
- c) 1 cm = mm (10 **or** 100 **or** 1000 **or** 0.1)
- d) If we draw a map with a drawing scale 1 : 50000 such that each 1 cm on the map represents reality. (0.5 km **or** 50 km **or** 50 m **or** 5 km)

2 Complete each of the following:

- a) If each 1 cm on a map represents 12 km in reality, then the distance between two cities in reality = km if the distance between them on the map = 4 cm.
- b) When $<$ the drawing scale is called enlargement.
- c) 1 km = m = cm.

3 If the length in a picture is 20 cm and the real length is 14 metres, find the drawing scale.**4 A rectangular farm, its width is 540 m and its length is 750 m, a plane took a picture of it with a scale 1 : 5000, find:**

- a) Its area in the picture.
- b) Its perimeter in the picture.

5 Write (true) or (false) and correct:

- a) When the drawing scale is more than 1, it refers to minimization. ()
- b) Before finding the drawing scale, we should make both lengths in the same unit. ()

Worksheet 16 till Lesson (3) - Unit (2)

1 Choose the correct answer:

- a) If the length of Suez Canal on a map with a drawing scale 1 : 100 000 is 15 cm,
(15 or 165 or 170 or 185)
then its real length in km =
(7 or 10 or 8 or 9)
- b) If $\frac{x-1}{10} = 0.7$, then $x =$
- c) Both of length in drawing and length in reality should have the units.
(the same or different)
- d) When length in reality < length in drawing, it refers to
(minimization or maximization or equality)

2 Complete each of the following:

- a) If $\frac{3x+10}{4} = 25$, then $x =$
- b) If the length of an ant in a picture > its real length, the scale of the picture is called
- c) The fourth proportional number of the following numbers 5, 9 and 15 is
- d) If the drawing length = 2 cm and the real length is 8 metres, then the drawing scale =

3 Ahmed drew a picture of his brother Osama with a drawing scale 1 : 40.
If the real height of Osama is 160 cm, what is his height in the picture?

.....

.....

4 If the price of 20 toys is 300 pounds, find the price of 3 toys.

.....

.....

5 A map is drawn with a scale 1 : 1 000 000, find the real distance between
Cairo and Tanta in kilometres if the map distance between them is 5 cm.

.....

.....

Worksheet 17 On Lesson (4) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

- a) If $a : b = 2 : 3$, $b : c = 3 : 5$, then $a : b : c = \dots\dots\dots$ (2 : 3 : 5 or 3 : 2 : 5 or 5 : 3 : 2)
- b) If $x : z = 5 : 7$, $y : z = 3 : 1$, find $x : y : z = \dots\dots\dots$ (15 : 21 : 7 or 15 : 3 : 14 or 3 : 14 : 15)
- c) If $a : b : c = 4 : 9 : 5$, then $a : b = \dots\dots\dots$ (4 : 3 or 4 : 9 or 9 : 5 or 4 : 5)
- d) If $a : b : c = 5 : 2 : 3$, then $a : c : b = \dots\dots\dots$ (3 : 4 : 6 or 3 : 5 : 2 or 3 : 2 : 5 or 5 : 3 : 2)

2 Complete each of the following:

5

- a) is to divide anything according to a given ratio.
- b) If $a : c = 2 : 5$, $c : b = 4 : 3$, then $a : b : c = \dots\dots\dots$.
- c) If $a : b = 2 : 3$ and $b : c = 3 : 7$, then $a : c = \dots\dots\dots$.
- d) If $a : b = \frac{1}{2}$ and $b : c = 2 : 3$, then $a : b : c = \dots\dots\dots$.

- 3 Ahmed, Adam and Samir are 3 brothers, the ratio between their ages is 2 : 5 : 3 and the sum of their ages is 30. Find the age of each one.

5

.....

.....

- 4 If the ratio between $a : b = 2 : 3$, $b : c = 7 : 8$, find the ratio between $a : b : c$.

5

.....

.....

- 5 A man distributed 6000 pounds among his sons in the ratio 2 : 3 : 5.

5

Calculate the share of each of them.

.....

.....

Worksheet 18 till Lesson (4) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

- a) If $\frac{x+12}{6} = 4$, then $x =$ (24 or 12 or 6 or 8)
- b) If the drawing scale is 1 : 1000 and the drawing length is 3.5 cm, then the real length = cm. (350 or 35 or 3500 or 35000)
- c) If $a : b = 3 : 5$, $a : c = 9 : 2$, then $a : b : c =$ (9 : 15 : 2 or 6 : 27 : 45 or 45 : 27 : 4)
- d) A man distributed 8000 pounds among his sons in the ratio 1 : 2 : 5, then the share of the third son is L.E. (1000 or 2000 or 5000 or 4000)
- e) If $X : Y : Z = 2 : 3 : 5$, $X + Y + Z = 30$, then $X =$ (6 or 8 or 10 or 15)

2 Complete each of the following:

5

- a) If $a : b = 3 : 2$, $b : c = 2 : 5$, then $a : b : c =$: :
- b) If the drawing scale > 1 , this expresses
- c) The proportion is
- d) If x , 18, 6 and 9 are proportional, then $x =$

- 3 Hoda, Mona and Thanaa started a business, Hoda paid L.E. 1500, Mona paid L.E. 2000 and Thanaa paid L.E. 2500. At the end of the year the loss of the company was L.E. 1200. Find the share of each of them in the loss.

5

- 4 A man died leaving 192000 pounds to be distributed among his wife, 2 sons and 2 daughters. If the share of the wife is $\frac{1}{8}$ of the whole money and the share of the son is twice the share of the daughter, find the share of the wife and the share of each son and daughter.

5

- 5 A map was drawn with a drawing scale 1 : 5000000 and the real distance between two cities is 250 km. Find the distance in the map.

5

Worksheet **19** on Lesson (5) - Unit (2)

Total mark

25

5

1 Choose the correct answer:

a) $1.5\% = \dots\dots\dots$

(0.15 or 0.015 or 15 or 150)

b) $\frac{3}{5} = \dots\dots\dots\%$

(0.6 or 6 or 60 or 600)

c) $15\frac{1}{2}\% = \dots\dots\dots$

 $(\frac{31}{200}$ or $\frac{31}{100}$ or $\frac{15.5}{10}$ or $\frac{31}{300})$

d) $0.52 = \dots\dots\dots\%$

(5.2 or 52 or $\frac{52}{100}$ or 0.052)

2 Complete each of the following:

5

a) $\dots\dots\dots$ is a ratio its second term is 100.

b) $\frac{3}{4} = \dots\dots\dots\%$

c) $\frac{2}{10} = \dots\dots\dots\%$

d) $100\% = \frac{\dots}{\dots} = \dots\dots\dots$

3 Find each of the following:

5

a) 3% of 3 km (in metres)

b) 40% of 200

c) $1 - (22\% + \frac{5}{10})$

4 The percentage of the number of girls in a school is 60% and the number of all pupils in the school is 900 pupils. Find the number of boys.

5

5 Find the greatest of each of the following:

5

a) 74% of 20 or 10% of 240

b) 82% of 100 or 62% 80

Worksheet 20 till Lesson (5) - Unit (2)

Total mark

25

5

1 Choose the correct answer:

- a) If $\frac{2}{5} = \frac{x}{20}$, then $x - 2 =$ (8 or 4 or 6 or 2)
- b) If a man distributed L.E. 200 among his three sons in the ratio 2 : 3 : 5,
then the share of the third = (50 or 100 or 150 or 75)
- c) $1\frac{3}{4} =$ % (125 or 150 or 175 or 225)
- d) If $a : b = 2 : 3$, $b : c = 6 : 7$, then $a : c = 4 : \dots$ (5 or 6 or 7 or 8)
- e) 30% of a number equals
(its third or its three fifths or its three tenths or its three sevenths)

2 Complete each of the following:

- a) $0.12 =$ %
- b) If the drawing scale < 1 , this expresses
- c) $1 - (25\% + 16\%) =$ %
- d) 100% of an amount =

- 3 a) An engineer made a design for a villa. If the height of the fence of the villa in this design is 5 cm and its real height is 3 metres. Find the drawing scale.

- b) If the percentage of the number of girls in a mixed class is 67%,
find the percentage of the number of boys in this class.

- 4 If the price of a kilogram of apple increased from L.E. 12 to L.E. 14.5, then
what is the percentage of the increase?

- 5 A sum of money is distributed among three persons in the ratio 2 : 3 : 5.
If the share of the 3rd is L.E. 210 more than the share of the first, then find
the share of each of them.

Worksheet 21 on Lesson (6) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

- a) If the cost price of a TV is 750 pounds and its selling price is 1700, this means a
(profit **or** loss **or** discount)
- b) The market price of a TV is 2000, it has been sold for 1500, then the percentage of discount = %.
(20 **or** 25 **or** 50 **or** 75)
- c) The percentage of loss = $\frac{\text{loss}}{\dots} \times 100\%$.
(cost price **or** selling price)

2 Complete each of the following:

5

- a) If we say the discount is 30%, that means if the price is 100 pounds, then the price after discount = pounds.
- b) Loss = -
- c) The percentage of profit = $\frac{\dots}{\dots} \times \dots$

3 If Salma bought a laptop for 7520 pounds and sold it for 8000 pounds, **find the percentage of the profit.**

5

.....

.....

4 If a farmer bought a new farm for 270000 pounds, then he found it unsuitable for planting so he decided to sell it for 200000 pounds, **find the percentage of loss.**

5

.....

.....

5 Find the meaning of each of the following:

5

- a) The cost price < the selling price.
- b) The cost price > the selling price.

Worksheet 22 till Lesson (6) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

a) $\frac{2}{7} = \frac{\dots}{49}$

(7 or 14 or 9)

b) If $X - 1, 5, 6, 2$ are proportional, then $\frac{1}{2}x = \dots$

(16 or 8 or 4)

c) $1 \text{ km} = \dots \text{ cm.}$

(1000 or 10 000 or 100 000)

2 Complete each of the following:

5

a) $1\frac{1}{4} = \dots\%$

b) If the numbers 9, 18, 1 and x form a proportion, then $x = \dots$

c) If $\frac{3}{10} = \frac{9}{50-x}$, then $x = \dots$

d) $75\% = \frac{\dots}{\dots}$

e) If the drawing length of an object is 2 cm and its real length is 20 metres, then the drawing scale is \dots

- 3 a) A shopkeeper bought some books for L.E. 800 and he sold them at a profit of 12%. Find the selling price.

5

- b) If the drawing scale of a map is 1 : 500000 and the distance between two cities on the map is 9 cm, calculate the real distance between them.

- 4 a) A merchant bought a cargo of orange for L.E. 18000 and he sold a part of it for L.E. 16000 while the rest went bad, calculate the loss percentage.

5

- b) The ratio between the measures of two consecutive angles in a parallelogram is 4 : 5. Find the measure of each angle.

- 5 a) Two people started a company together, the first one paid L.E. 50000 and the second paid L.E. 80000. At the end of the year, the net profit was L.E. 3900, find the share of each one of them in profit.

5

- b) A company sells a television set for L.E. 1035, if the percentage of the profit of the company is 15%, calculate the cost price of the television set.

School Book Unit Test

- 1 Find the missing number (x) if the numbers 3 , 4 , 9 , x are proportional.

- 2 Write in the form of a common fraction in its simplest form each of the following.
33% , 12.5% , 75%

- 3 The number of pupils of grades first, second and third in a primary school is 480 pupils.
If the ratio among the number of pupils in the first grade to those of the second grade to those of the third grade is 6 : 5 : 4, calculate the number of pupils in each grade.

- 4 Nahed bought an automatic washing machine for L.E. 3600 and the discount was 10%. Calculate the original price of the washing machine before discount.

- 5 An edifice of height 12 metres. Its shade at a moment was 4 metres. What is the height of a tree next to the edifice if its shade is 2 metres long at the same moment.

- 6 Hany, Khaled and Fady shared a commercial business, Hany, paid L.E. 30000, Khaled paid L.E. 40000 and Fady paid L.E. 5000. At the end of the year the loss was 5000 pounds. Find the share of them from the loss.

- 7 A shopkeeper for electric sets sold a refrigerator for L.E. 3180. If the percentage of his profit is 6%, find the buying price.

Al-Adwaa Unit Test

Total mark

25

1 Choose the correct answer:

5

- a) $\frac{2}{4} = \frac{\dots}{12}$ (4 or 8 or 6 or 3)
- b) $45\% = \dots$ (as a fraction in the simplest form) ($\frac{45}{100}$ or $\frac{9}{20}$ or $\frac{4}{10}$ or $\frac{5}{100}$)
- c) A picture of a tree is drawn with a drawing scale 1 : 40. If the real length of the tree is 3.2 m, **what is its length in the drawing?** (8 m or 0.08 m or 25 m or 80 m)
- d) A merchant sold his goods with a profit of 17%, then the percentage of the selling price to the buying price = (17% or 117% or 83% or 50%)
- e) Which of the following ratios is equivalent to $\frac{21}{27}$? ($\frac{7}{54}$ or $\frac{9}{7}$ or $\frac{45}{35}$ or $\frac{35}{45}$)

2 Complete the following:

5

- a) If the scale of a drawing > 1 , it expresses
- b) If 9, 12, x and 72 are proportional numbers, then $x = \dots$
- c) If the ratio between two numbers is 1 : 10 and $\frac{2}{3}$ of their sum is 66, then the two numbers are:,
- d) If $\frac{2(x-4)}{9} = \frac{36}{54}$, then $x = \dots$
- e) If 60% of a number is 138, then the number is
- 3 A magnified picture of an insect was taken with an enlargement ratio 280 : 1, if the insect's length in the picture is 5.6 cm, **find its real length in mm.**
- 4 A shop sold TV sets for L.E. 2550 each, after a 25% discount, **what's the original price?**
- 5 If the perimeter of an isosceles triangle is 15 cm and the ratio between its sides lengths is 1 : 1 : 3, **find its lengths.**

Worksheet 23 On Lesson (1) - Unit (3)

Total mark


25

5

1 Choose the correct answer:

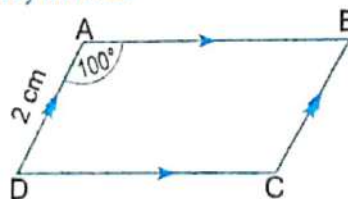
- The quadrilateral which has only two parallel sides is called a
(parallelogram or trapezium or square)
(\overline{AB} or \overline{AC} or \overline{BC})
- If ABCD is a parallelogram, then $\overline{AD} \parallel$
- The two diagonals are equal in length in the
(rectangle or trapezium or rhombus)
(5 or 4 or 3)
- Any quadrilateral has sides.
- The sum of measures of any two consecutive angles in the parallelogram equals
(360° or 180° or 90°)

2 Complete each of the following:

- The two diagonals each other in the parallelogram.
- The number of squares in  is squares.
- The four angles are right in each of and
- Each two opposite sides in the parallelogram are
- The two diagonals are in the rhombus.

3 According to the drawn parallelogram, find:

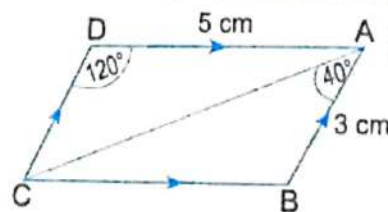
- The length of \overline{BC} .
- $m(\angle C)$.
- $m(\angle D)$.



4 In the opposite figure:

If ABCD is a parallelogram, find:

- $m(\angle ACD)$.
- The perimeter of $\square ABCD$.



5 Write the definition of each of the following:

- Trapezium.
- Parallelogram.

Worksheet 24 on Lesson (1) - Unit (3)

Total mark

25

1 Choose the correct answer:

- a) The two diagonals are perpendicular and equal in length in the
(square or rhombus or rectangle)
- b) The measure of each angle in the rectangle is (180° or 90° or 360°)
- c) The rhombus has (4 equal sides or 2 equal diagonals or 4 right angles)
- d) Each two opposite are equal in measure in the parallelogram.
(sides or angles or diagonals)
- e) The is a quadrilateral which has only two parallel sides.
(square or rhombus or trapezium)

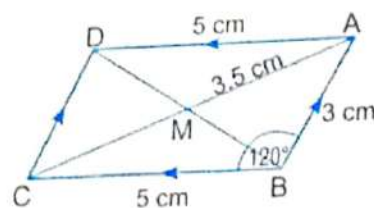
2 Complete each of the following:

- a) Each two opposite sides are equal and parallel in each of and
- b) The two diagonals are perpendicular in and
- c) Each two opposite angles are in the parallelogram.
- d) The four sides are equal in length in each of and
- e) Any quadrilateral has 4 , 4 and 2

3 In the opposite figure:


ABCD is a parallelogram in which
 $m(\angle ABC) = 120^\circ$, $AM = 3.5$ cm,
 $AB = 3$ cm and $BC = 5$ cm, calculate:


- a) $m(\angle ADC)$. b) The perimeter of $\triangle ADC$.



4 Write 3 properties of the parallelogram.

5 How many rectangles are there in each of the following figures?

- a)  Number of rectangles is

- b)  Number of rectangles is

Worksheet 25 on Lesson (2) - Unit (3)

Total mark

25

5

1 Choose the correct answer:

a) $\triangle \triangle \nabla \triangle \triangle \nabla \triangle \triangle \nabla$ ($\triangle \nabla \triangle$ or $\triangle \triangle \nabla$ or $\nabla \triangle$)b) (\bullet or $\bullet \bullet$ or $\bullet \bullet \bullet$)

c) xy xy xy

(yx or xy or xx)

d) (\square or \bigcirc or \bigcirc)e) $\star \star \star \star \star \star \star$ (\star or $\star \star$ or $\star \star \star \star \star$)

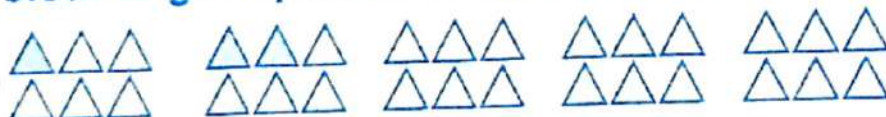

2 Complete each of the following:

a) !? !!? !!!?

b) c) d) $\triangle \bigcirc \triangle \bigcirc \bigcirc \triangle \bigcirc \bigcirc \bigcirc$

e) F FF FFF

3 Colour to get a pattern in each of the following:

a) b) 

4 Write (a pattern) or (not a pattern) in front of each of the following:

a) X XX XXX XXXX

b) c) 5 Make two patterns of your own using \triangle , \bigcirc and \square , then describe your patterns.

Worksheet 26 till Lesson (2) - Unit (3)

Total mark

25

5

1 Choose the correct answer:

a) xyx xyx xyx

(yyx or xxy or xyx)

b) ☆● ☆● ☆●

(●☆ or ☆● or ●●☆)

c)   

(△ or △△ or ▽)

d) Any quadrilateral has sides.

(3 or 4 or 5)

e) The two diagonals are equal in length in the

(rectangle or rhombus or triangle)

2 Complete each of the following:

a) The two diagonals of the parallelogram each other.

b)    c)   

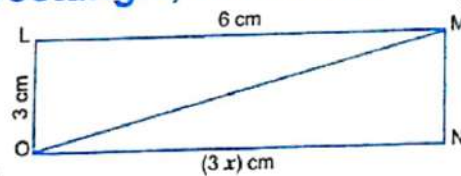
d) The rhombus has 4 sides.

e) The square and rectangle have diagonals.

3 In the opposite figure, if LMNO is a rectangle, then find:

a) The length of \overline{MN} .b) The value of x .

c) The area and the perimeter of the rectangle LMNO.



4 Write the name of the quadrilateral according to the given sentence:

a) The two diagonals bisect each other, are perpendicular and are equal in length. (.....)

b) The two diagonals are equal in length and the measure of each angle is 90° . (.....)

c) The four sides are equal in length and the two diagonals are perpendicular. (.....)

5 Write four properties of the parallelogram.

Worksheet 27 on Lesson (3) - Unit (3)

Total mark

25

5

1 Choose the correct answer:

a) The cuboid has faces.

(6 or 8 or 12)

b) $1 \text{ dm}^3 = \dots\dots\dots \text{ cm}^3$.

(10 or 100 or 1000)

c) The cubic centimetre is a unit for measuring the

(perimeter or volume or area)

d) The cube has edges.

(12 or 6 or 8)

e) $1800 \text{ mm}^3 = \dots\dots\dots \text{ cm}^3$.

(18 or 180 or 1.8)

2 Complete each of the following:

5

a) The cube has faces each one is in the shape of a

b) $1 \text{ m}^3 = \dots\dots\dots \text{ cm}^3$.

c) is any object that occupies a room in the space.

d) $0.8 \text{ cm}^3 = \dots\dots\dots \text{ mm}^3$.

e) The cubic metre is a unit for measuring

3 Write the suitable unit to estimate the volume of each of the following:

5

a) A classroom.

b) A box.

c) A huge container.

4 Write (geometrical solid) or (not geometrical solid) next to each of the following:

5

a) A cone.

b) A piece of a stone.

c) A car.

d) A sphere.

5 Write the definition of:

5

a) Solid.

b) Volume.

25

5

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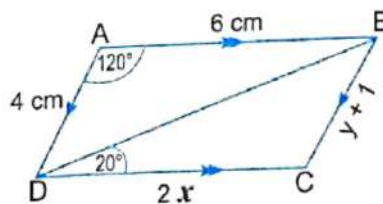
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3

Worksheet 29 on Lesson (4) - Unit (2)

Total mark

25

1 Choose the correct answer:

5

- a) The volume of a cuboid with dimensions of 2 m, 3 m and 5 m =
(25 m³ or 30 m² or 30 m³)
- b) The volume of a cuboid = base area X (length or height or width)
- c) 5 m³ = cm³. (5000 or 50 000 or 5000 000)
- d) The cuboid has 6 faces. (rectangular or triangular or square)
- e) 6000 mm³ = cm³. (6000 or 600 or 6)

2 Complete each of the following:

5

- a) The volume of a cuboid = X X
- b) The cuboid has edges.
- c) 1 dm³ = cm³.
- d) The volume of a cuboid with base area of 20 cm² and height of 3 cm = cm³.
- e) A cuboid with a volume of 120 cm³ and base area of 60 cm², its height = cm.

3 Find in dm³ the volume of a cuboid whose dimensions are 6 cm, 5 cm and 4 cm.

5

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4 If the volume of a cuboid is 24 cm³ and the area of its base is 6 cm², find its height.

5

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5 A cuboid of dimensions 6 cm, 5 cm, 8 cm and another cuboid whose base area is 28 cm² and height is 8 cm. Find the difference between their volumes.

5

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Worksheet 30 till Lesson (4) - Unit (3)

Total mark

25

5

1 Choose the correct answer:

- a) The volume of a cuboid = X height (base area **or** length **or** width)
- b) A cuboid has vertices. (8 **or** 6 **or** 12)
- c) $6 \text{ m}^3 = \dots\dots\dots \text{ dm}^3$. (60 **or** 600 **or** 6000)
- d) $10 \text{ cm}^3 = \dots\dots\dots \text{ dm}^3$. (1 **or** 0.01 **or** 0.001)
- e) The volume of a cuboid with dimensions of 5 cm, 6 cm and 2 cm =
(30 cm^3 **or** 60 cm^2 **or** 60 cm^3)

2 Complete each of the following:

5

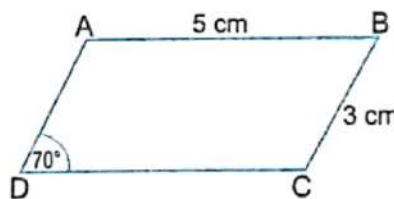
- a) $\bigcirc \triangle \bigcirc \triangle \bigcirc \triangle$
- b) The rhombus has 4 sides.
- c) The is a quadrilateral which has only two parallel sides.
- d) The is any object which occupies a room in the space.
- e) $4 \text{ cm}^3 = \dots\dots\dots \text{ mm}^3$.

3 In the opposite figure:

5

If ABCD is a parallelogram in which $AB = 5 \text{ cm}$, $BC = 3 \text{ cm}$ and $m(\angle D) = 70^\circ$, then find:

- a) The length of \overline{CD} .
- b) $m(\angle B)$ and $m(\angle C)$.
- c) The perimeter of $\square ABCD$.



- 4 A box in the shape of a cuboid with dimensions 30 cm, 25 cm and 15 cm is filled with cuboid-shaped pieces of sweets of dimensions 6 cm, 5 cm and 3 cm.

5

Find the number of the sweet pieces.

- 5 Write two common properties between a square and a rectangle.

5

Worksheet 31 on Lesson (5) - Unit (3)

Total mark

25

5

1 Choose the correct answer:

- a) The volume of a cube with edge length of 5 cm = cm^3 . (25 or 15 or 125)
 b) The cube is a cuboid with equal dimensions. (1 or 2 or 3)
 c) If the volume of a cube is 1 cm^3 , then the sum of its edges = cm. (9 or 8 or 12)
 d) If the area of one face of a cube is 25 cm^2 , then its volume equals cm^3 . (25 or 100 or 125)
 e) A cube has equal edges. (6 or 8 or 12)

2 Complete each of the following:

- a) The volume of a cube = \times \times
 b) If the area of one face of a cube is 9 cm^2 , then its volume = cm^3 .
 c) A cube has faces, each one is in the shape of a
 d) If the volume of a cube is 125 cm^3 , then its edge length =
 e) The volume of a cube in which the perimeter of one of its faces is 40 cm
 = cm^3 .

3 Which is greater in volume, a cuboid of dimensions of 30, 40 and 50 cm or a cube that has an edge of 40 cm?

4 A cuboid box of dimensions 60 cm, 48 cm and 24 cm is used to pack cubic bars of soap if the edge length of the soap bar is 6 cm, how many bars of soap will fit in the box?

5 If the sum of areas of two faces of a cube is 50 cm^2 , find its volume.

Worksheet **32** till Lesson (5) - Unit (3)

Total mark

25

1 Choose the correct answer:

5

- a) A cube is a cuboid with equal edges. (6 or 8 or 12)
- b) If the length of the edge in a cube is 4 cm, then the area of one face is cm^2 . (64 or 16 or 8)
- c) xy xy xy (yx or xyx or xy)
- d) A is not a geometric solid. (cone or sphere or car)
- e) The four sides are equal in length in each of a rhombus and a (square or trapezium or rectangle)

2 Complete each of the following:

5

- a) The two diagonals are perpendicular in each of and
- b) $\triangle \bigcirc \triangle \triangle \bigcirc \triangle \triangle \bigcirc \triangle$
- c) $2000 \text{ cm}^3 = \dots \text{ dm}^3$
- d) The volume of a cuboid = \times
- e) In a parallelogram, the two diagonals each other.

3 Which is greater in volume; a cube its edge length is 6 cm or a cuboid of dimensions 4, 5 and 6 cm?

5

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4 Write three common properties between a rhombus and a square.

5

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.....

5 Write three examples of geometric solids.

5

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Worksheet 33 on Lesson (6) - Unit (3)

Total mark

25

1 Choose the correct answer:

a) 5 litres =

b) 38 millilitres = cm^3 .

c) 1.5 litres =

d) 0.7 m^3 = cm^3 .

e) is the volume of the inner space of a solid. (Volume or Solid or Capacity)

(5000 dm^3 or 5000 cm^3 or 0.5 m^3)

(38000 or 0.038 or 38)

(1.5 dm^3 or 15000 dm^3 or 1500 dm^3)

(7000 000 or 700 000 or 7000)

2 Complete each of the following:

a) The suitable unit for measuring the volume of an amount of medicine in a syringe is

b) 420 000 cm^3 = litres.c) 3.45 litres + 0.5 dm^3 + 50 cm^3 = litres.d) $4 \frac{3}{4}$ litres = dm^3 .e) 1 dm^3 = L.

3 Convert each of the following into cubic metres:

a) 725.8 L.

b) 8 500 000 mL.

c) 7 265 dm^3 .

4 A cuboid with dimensions of 12 cm, 11 cm, 20 cm was filled with oil.

Calculate the total price of the oil if the price of one litre is 7.5 pounds.

5 A swimming pool is in the shape of a cuboid whose internal dimensions are 40 m, 30 m and 1.8 m, find its capacity in litres.


Worksheet 34 till Lesson (6) - Unit (3)
Total mark

25

1 Choose the correct answer:

5

- a) The unit of measuring capacity is (metre **or** square metre **or** litre)
- b) $1\text{ L} = \dots\dots\dots \text{dm}^3$. (10 **or** 1 **or** 1000)
- c) $\frac{3}{4}$ litre equals (750 cm^3 **or** 75 cm^3 **or** 7.5 dm^3)
- d) L and mL are units which are used to measure the
(capacity **or** area **or** perimeter)
- e) 5800 mL = L. (58 **or** 5.8 **or** 580)

2 Complete each of the following:

5

- a) Each two opposite sides are and in a parallelogram.
- b) The four sides are equal in length in each of and
- c) $\bigcirc \triangle \bigcirc \bigcirc \triangle \bigcirc \bigcirc \triangle \bigcirc$
- d) The of the solid is the number of units which it consists of.
- e) $2\text{ m}^3 = \dots\dots\dots \text{cm}^3$.

3 A cube with a volume of 27 m^3 , find the perimeter of its base.

5

.....

.....

4 Write three examples of the geometric solids.

5

.....

.....

5 Write the definition of:

5

- a) The trapezium.
- b) The solid.

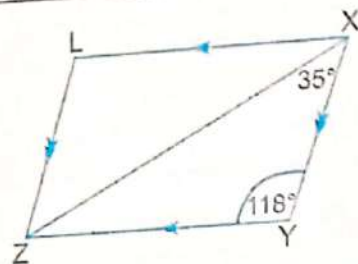
School Book Unit Test

1 Complete the following:

- A rectangle is a parallelogram
- $120 \text{ dm}^3 = \dots\dots\dots = \dots\dots\dots \text{ cm}^3$.
- $2580000 \text{ mm}^3 = \dots\dots\dots = \dots\dots\dots \text{ m}^3$.
- The volume of a cuboid = \times
- $2.65 \text{ litres} = \dots\dots\dots = \dots\dots\dots \text{ cm}^3$.

2 The opposite figure:

XYZL is a parallelogram in which
 $m(\angle Y) = 118^\circ$, $m(\angle YXZ) = 35^\circ$
Find: $m(\angle L)$, $m(\angle LXZ)$.



3 Discover the pattern, then describe it and complete its repetition twice:

- ! ! ? ? ! ! ? ?
-

4 How many cm^3 are enough to fill a box in the shape of a cuboid, its internal dimensions are 50 cm, 35 cm and 20 cm?

5 A cuboid of volume 6480 cm^3 , its height = 15 cm, its width = 18 cm. Calculate its length.

6 A box of milk in the shape of a cube of edge length 12 cm. It is wanted to put a number of these boxes in a box of carton in the shape of a cube of edge length 60 cm. How many boxes of milk can be put in the carton box?

7 A vessel in the shape of a cube with edge length 15 cm is filled with honey:

- Calculate the capacity of the vessel.
- If the price of one litre is L.E. 8, calculate the price of honey.

Al-Adwaa Unit Test

Total mark

25

5

1 Complete the following:

- The capacity of a container which is filled with $89000 \text{ mm}^3 = \dots\dots\dots$ litres.
- In the opposite figure: the number of parallelograms is $\dots\dots\dots$
- If the area of one base of a cuboid is 45 cm^2 and its volume is 270 cm^3 , then its height = $\dots\dots\dots$ cm.
- The two diagonals are equal and perpendicular in the $\dots\dots\dots$
- The following figure in the pattern: $\triangle \bigcirc \triangle \bigcirc \bigcirc \triangle \bigcirc \bigcirc \bigcirc \triangle$ is $\dots\dots\dots$

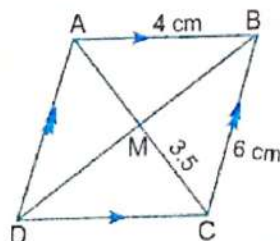


2 Choose the correct answer:

- If the perimeter of one face of a cube is 24 cm , then its volume = $\dots\dots\dots \text{ cm}^3$.
(36 or 4 or 216 or 144)
- mL is the measuring unit of the $\dots\dots\dots$ (capacity or length or perimeter or area)
- If the sum of lengths of all the edges of a cube is 84 cm , then its volume = $\dots\dots \text{ cm}^3$.
(7 or 49 or 588 or 343)
- If the capacity of a cuboid-shaped tank is $45\,000$ litres and its height is 5 m , then the area of its base = $\dots\dots\dots$ (9000 m^2 or 9 cm^2 or 9 m^2 or 0.3 m^2)
- The shape whose diagonals are perpendicular but not equal is the $\dots\dots\dots$
(rectangle or rhombus or square or parallelogram)

3 Convert the following into litres: 12 m^3 , 3.2 dm^3 , 1205 cm^3 , 847 mL

- In the parallelogram ABCD, $AB = 4 \text{ cm}$,
 $BC = 6 \text{ cm}$ and $MC = 3.5 \text{ cm}$.
Find the perimeter of $\triangle ACB$.



- Which is greater in volume; a cube of edge length 9 cm or a cube whose base perimeter is 48 cm ?

1 Choose the correct answer:

- a) The following data are descriptive expect
(favourite colour **or** birthplace **or** age **or** blood type)
- b) is one of the quantitative data. (Area **or** Hobby **or** Name **or** Favourite activity)
- c) is one of the descriptive data. (Age **or** Blood type **or** Weight **or** Height)

2 Complete the following:

- a) The kinds of statistical data are and
- b) Name is one of the data.
- c) Descriptive data are written in the form of

3 Underline all the descriptive data and circle the quantitative data:

(Name - Age - Weight - Email - Gender - Hobby - University - Telephone number - Favourite team - Address)

.....

.....

4 Put (True) or (False):

- a) School activities are quantitative data. ()
- b) Blood type is one of the descriptive data. ()
- c) Quantitative data are written in the form of description. ()

Worksheet 36 on Lesson (1) - Unit (4)

Total mark

25

6

1 Choose the correct answer:

a) is one of the quantitative data.

(Address art or T-shirt colour or Volume or Name)

b) All the following data are quantitative except

(length or weight or blood type or age)

c) All the following data are descriptive data expect

(favourite food or favourite colour or length or name)

2 Complete the following:

a) Age is one of data.

b) Quantitative data are written in the form of

c) Telephone number is one of

3 Classify the opposite data into quantitative and quantitative data:

Name	:	.....
Age	:	.....
Address	:	.....
Height	:	.....
Weight	:	.....
Blood type	:	.....
Birthplace	:	.....

4 Classify the following data into quantitative data and descriptive data:

(age – colours of flag – marks of maths exam – weight – marital status – temperature – length – nationality – grade – gender – height – type of books – colour of uniform – hobby – number of brothers – number of pages in a book – sport)

Worksheet 37 on Lesson (2) - Unit (4)

Total mark

25

6

- 1 Choose the correct answer:
From the opposite table:

- a) Which kind of sets has the most number of sets?
(TV or Fan or Mixer or Heater)
- b) Which kind of sets has the least number of sets?
(TV or Fridge or Heater or Fan)
- c) The table is called the

Kind of sets	Tally	Frequency
TV	|||| |||	10
Fan	|||| |||	12
Mixer	||||	8
Heater	||||	6
Fridge	||||	5

(frequency table or tally frequency table or frequency curve)

- 2 Complete the following from the previous table:

6

- a) The sum of the most set and the least set is
- b) The difference between the TV set and the mixer is
- c) The percentage of the least kind of sets \approx

- 3 One of students surveyed 20 students about their favourite hobbies and the results were as follows:

7

Reading	Singing	Football	Reading	Acting	Football	Acting
Football	Football	Reading	Singing	Singing	Football	Acting
Football	Reading	Reading	Reading	Singing	Football	

- Form a tally frequency table and form the frequency table.

- 4 The following table shows the number of books that were borrowed from a library in two days:

6

Kind of books	Historical	Short stories	Cook	Art	Fantasy	Science fiction	Total
No. of books	14	10	7	12	13	9	65

- Find the most and the least books borrowed and find their percentage.

Worksheet 38 till Lesson (2) - Unit (4)

Total mark

25

1 Choose the correct answer:

5

- a) is quantitative data. (Address or Car mark or T-shirt colour or Volume)
- b) All the following data are descriptive except
(favourite food or favourite colour or favourite car or length)
- c) All the following data are quantitative except
(length or weight or blood type or age)

2 Complete the following:

5

- a) Length is one of the data.
- b) Quantitative data are written in the form of
- c) Telephone number is one of the data.

3 Classify the opposite data into descriptive and quantitative data:

5

Name	:	.....
Age	:	.....
Address	:	.....
Height	:	.....
Weight	:	.....
Blood type	:	.....
Birthplace	:	.....

4 A survey was carried out on the starting letters of 20 people
O T N V M N S T Y V Y S T V M N S Y Y Y

5

- a) Calculate the percentage of the greatest starting letters.
- b) Calculate the percentage of the least starting letters.

5 The following table shows the number of hours which spent by 40 pupils to study their lessons:

5

No. of hours	1	2	3	4	5	Total
No. of pupils	6	3	8	X	11	40

- Find the value of x.

Worksheet 39 on Lesson (3) - Unit (4)

Total mark 25

1 Choose the correct answer:

- a) If 78 is the greatest value in the set of individuals and the range = 38, then the smallest value of this set = (25 or 30 or 35 or 40)
- b) If the values of a frequency distribution lie between (15, 70), then its range = (85 or 55 or 15 or 70)
- c) If the marks of 3 students in one exam are (36, 27, 57), then the range of these marks = (30 or 20 or 40 or 50)

2 Complete the following:

- a) If the range of some values = 40 and the number of sets = 10, then the length of the set =
- b) The number of the sets = $\frac{\text{the range}}{\text{.....}}$
- c) = maximum value - minimum value.
- d) Height, age and weight represent data.

3 In a competition for the tallest student among the college students the results were as follows:

(73 - 71 - 75 - 88 - 65 - 77 - 59 - 66 - 63 - 85 - 64 - 72 - 58 - 65 - 58 - 74 - 73 - 90 - 92 - 87 - 60 - 70 - 72 - 85 - 56 - 54 - 57 - 70 - 90 - 81 - 60 - 88 - 74 - 72 - 60 - 57 - 66 - 83 - 51 - 65 - 74 - 75) Form the frequency table.

4 A sports club measured the heights of 100 members and registered the results in this table:

Height in cm	145 -	150 -	155 -	160 -	165 -	170 -	Total
The number of members	10	22	24	16	15	13	100

• From the previous table, find:

- a) The number of members who are shorter than 165 cm and their percentage.
- b) The number of members who are 160 cm tall and more and their percentage.

Worksheet 40 till Lesson (3) - Unit (4)

Total mark

25

1 Choose the correct answer:

a) The following data are descriptive except

(name or age or nationality or blood type)

b) is one of the quantitative data.

(Age or Blood species or Favourite colour or Birthplace)

c) The range of the set of values 9, 3, 5, 20 and 7 is (11 or 15 or 17 or 13)

2 Complete the following:

a) The kinds of statistical data are and

b) The favourite colour is from data.

c) The birthplace are from data.

d) The range = -

3 The opposite table shows the weights of some bags in Cairo International Airport:

17	20	16	21	18
23	21	24	28	32
28	36	30	35	32
31	29	25	26	24
27	24	26	22	29
38	27			

Form the frequency table of sets using the sets (16 - 20 - 24 - 28 - 32 - 36 - 40).

4 A maths teacher measured the heights of 100 students in cm, then registered the results in the following table:

Height in cm	130 -	140 -	150 -	160 -	Total
Frequency	35	27	20	18	100

Answer the following:

a) What is the number of students who are shorter than 160 cm and what is their percentage?

b) What is the number of students who are 140 cm and more and what is their percentage?

Worksheet 41 on Lesson (4) - Unit (4)

Total mark

25

1 Choose the correct answer:

6

- a) To represent the statistics data, we can use the
(frequency line or frequency curve or frequency set)
- b) The centre of the set is equal to
($\frac{\text{lower limit} + \text{upper limit}}{2}$ or $\frac{\text{lower limit} - \text{upper limit}}{2}$ or $\frac{\text{the range}}{\text{the length of the set}}$ or $\frac{\text{the range}}{\text{the number of sets}}$)
- c) If the lower limit of a set is 20 and the upper limit is 60, then the centre of the set is equal to (50 or 60 or 40 or 30)

2 Complete the following:

6

- a) The polygon is considered one of the ways of representing data.
- b) If the point (x, y) represents a set on the lattice, then x refers to the and y is the
- c) We draw a joining each two consecutive points to get a frequency polygon.
- d) We draw free hand curve joining each two consecutive points to get a

3 Find the points (ordered pair) which represent the sets for the following table:

6

Temperature degrees	26 -	30 -	34 -	38 -	42 -	46 -	Total
Number of cities	3	5	7	9	4	2	30

4 The following table shows the marks of 70 students in one month in maths:

7

Marks	60 -	70 -	80 -	90 -	100 -	Total
Number of students	7	9	13	25	16	70

- a) What is the number of students who recorded less than 100?
- b) Draw the frequency curve for these data.

Worksheet 42 till Lesson (4) - Unit (4)

Total mark

25

1 Choose the correct answer:

- a) The favourite colour is data. (quantitative or descriptive or qualified)
- b) If the range of a set of values 5, 10, 12, and x is 20, then $x =$
(29 or 25 or 30 or 35)
- c) The number of sets = $\frac{\text{the range of the set}}{\text{.....}}$ (height or width or length or distance)

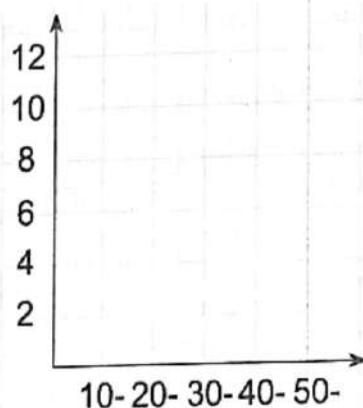
2 Complete the following:

- a) The age is a kind of data.
- b) The range of the set of values 9, 6, 4, 5 and 7 is
- c) If the lower limit of a set is 10 and the upper limit is 40, then the centre of the set is equal to
- d) The difference between the greatest value and the smallest value is called the of a set of data.

3 Draw the frequency curve according to the following:

(centre of set, its frequency)

(5, 2), (15, 4), (25, 12), (35, 7), (45, 4)



4 The following table shows daily hours of studying for 30 students:

Number of hours	2 -	4 -	6 -	8 -	10 -	12 -	Total
Number of students	13	6	7	9	12	.....	50

- a) Complete the table.
- b) Draw the frequency curve of these data.

School Book Unit Test

- 1 Classify the set of the following data into quantitative data and descriptive data.

(age - the colours of the nation's flag - marks of the exam in maths - weight - social case - temperature degrees - tallness - nationality - sex - score in science - the kind of the book that you read - the colour of school uniform suit - the preferable hobby - the number of sisters - the number of pages of Arabic book)

- 2 A sample is taken from a tourists group coming to Luxor in one day in winter the number of sample was 33 tourists, the nationalities of the tourists were as follows.

(Russian - American - English - Italian - French - American - English - Russian - French - American - Italian - Russian - American - French - Italian - English - Russian - Italian - Italian - Russian - Russian - American - Italian - English - Russian - English - Italian - Russian - American)

- Form a simple frequency table for the previous descriptive data, then answer the following questions.

- Which nationality has the greatest number in this group? Express this by a percentage.
- Which nationality has the smallest number in this group? Express this by a percentage.
- What do you advise the responsible about tourism in Luxor?

- 3 In a competition for passing the acceptance exam to a sports college. The weights of 40 students presenting to this competition were as follows.

(50 - 53 - 75 - 88 - 65 - 77 - 59 - 66 - 63 - 85 - 64 - 72 - 58 - 65 - 56 - 74 - 73 - 90 - 92 - 87 - 60 - 70 - 72 - 85 - 56 - 54 - 75 - 76 - 90 - 81 - 60 - 88 - 74 - 72 - 60 - 57 - 66 - 83 - 51 - 60)

- a) Form the frequency table of sets for the previous weights.

- b) Draw the frequency curve of the obtained table, then answer the following questions:

- What is the number of the students who have the greatest weights? What is their percentage?
- What is the number of students whose weights are less than 60 kg? What is their percentage?

Al-Adwaa Unit Test

Total mark

25

1 Choose the correct answer:

- a) The following data are descriptive except
(number of students or name or address or birthplace)
- b) is one of the quantitative data. (Name or Address or Tallness or Gender)
- c) If the value of a frequency distribution lies between (30, 70), then the range of the distribution =
(100 or 40 or 50 or 70)
- d) Which of the following data is not quantitative? -
(ID number or Date or Year of birth or Job title)

2 Complete each of the following:

- a) The kinds of statistic data are quantitative data and
- b) The range = x the number of the sets
- c) The range = -
- d) If we divide the data into the sets (7 - , 14 - , 21 - ,), then the length of each set =
- e) The favourite colour is data.

3 The following data shows the number of hours which are spent daily by 30 pupils to study their lessons:

Number of hours	2 -	4 -	6 -	8 -	10 -	Total
Number of pupils	6	9	4	7	4	30

Represent these data by a frequency curve.

4 Find the range of the set: 12, 16, 45, 23, 7

5 The following table shows the heights of 96 students in centimetre:

Height in cm	140 -	144 -	148 -	152 -	156 -	Total
Number of students	12	20	35	16	12	95

- a) What is the percentage of students who are shorter than 156 cm?
- b) What is the number of students who are taller than or equal to 144 cm and shorter than 156 cm?

Monthly Exams

October Model Exam 1

Choose the correct answer:

Total mark

15

- 1) If $a : b = 2 : 5$, $b : c = 10 : 3$, then $a : b : c =$
(3 : 4 : 10 or 4 : 3 : 10 or 4 : 10 : 3 or 10 : 3 : 4)
- 2) The ratio between the area and the perimeter of a square with side length 4 cm is
(16 : 8 or 1 : 1 or 1 : 8 or 8 : 1)
- 3) $\triangle \bigcirc \triangle \bigcirc$
(\triangle or \triangle or \square or \bigcirc)
- 4) The area of the cuboid base whose volume is 3000 cm^3 , its height is 10 cm = cm^2 .
(30 or 300 or 3000 or 3)
- 5) If the ratio between the measures of two consecutive angles in a parallelogram is 2 : 7, then the measure of the greater one is
(140° or 60° or 70° or 90°)
- 6) A worker built a wall of area 12 m^2 in 3 hours, then his rate of work is m^2/hr .
(3 or 8 or 4 or 7)
- 7) The best unit for estimating the volume of a gift box is
(m^3 or dm^3 or mm^3 or mL)
- 8) is a way of comparing between two quantities of the same type and unit by division.
(Ratio or Probability or Proportion or Profit)
- 9) The volume of a cuboid with dimensions 6 cm, 2 cm, 10 cm, is cm^3 .
(120 or 1200 or 12 or 2)
- 10) Each two opposite angles in the square
($= 90^\circ$ or $> 90^\circ$ or $< 90^\circ$ or $\simeq 90^\circ$)
- 11) If $a : b = 3 : 4$, $a : c = 2 : 5$, then $b : c =$
(6 : 8 or 8 : 15 or 6 : 15 or 15 : 8)
- 12) If the volume of a cuboid = 15 cm^3 and its base dimensions are 3 cm, 5 cm, then its height = cm.
(1 or 10 or 0.1 or 0.001)
- 13) 1 : 1.25 in the simplest form is
(4 : 5 or 5 : 4 or 1 : 4 or 5 : 1)
- 14) The two diagonals are equal and perpendicular in the
(square or rhombus or rectangle or triangle)
- 15) If the ratio between two numbers is 2 : 3 and the difference between them is 4, then the two numbers are
(12,8 or 8,4 or 2,6 or 6,10)

October Model Exam 2

Total mark

25

1 Complete each of the following:

- a) In the all sides are equal and adjacent sides are perpendicular.
- b) A tractor ploughs 15.5 feddans in 20 hours, then its work rate is feddans/ hour.
- c) The ratio between the lengths of two sides of a square is :
- d) $2 \text{ cm}^3 = \dots\dots\dots \text{mm}^3$.
- e) If the volume of a cuboid is 180 cm^3 and its height = 10 cm, then the area of its base = cm^2 .

2 Choose the correct answer:

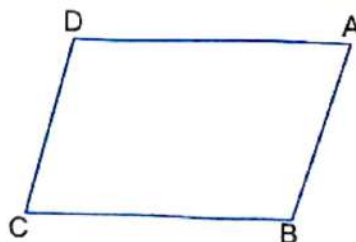
- a) If $a : b = 1 : 3$, $b = 9$, then $a = \dots\dots\dots$ (1 or 3 or 9 or 12)
- b) If 6, 5 are two quantities of the same kind and unit, then $\frac{6}{5}$ is called
(ratio or proportion or simplest fraction or probability)
- c) The two diagonals are equal in length in a
(parallelogram or rectangle or rhombus or triangle)
- d) $300 \text{ mm}^3 = \dots\dots\dots \text{cm}^3$. (0.3 or 0.003 or 0.03 or 3)
- e) If $a : b = 2 : 3$, $b : c = 3 : 7$, then $a : c = \dots\dots\dots$ (2 : 7 or 3 : 7 or 7 : 2 or 3 : 2)

- 3 a) If Salma has 350 piastres and her sister has $3\frac{3}{4}$ pounds, find the ratio between what Salma and her sister have.

- b) Find the ratio between 16 and 64 in the simplest form.

- 4 In a cuboid if the sum of its edges = 40 cm and its base dimensions are 2 cm and 5 cm. Find its volume.

- 5 In the opposite figure ABCD is a parallelogram, where $m(\angle A) : m(\angle B) = 1 : 2$. Find $m(\angle D)$.



November Model Exam 1

Total mark

15

Choose the correct answer:

- 1) Magnification means the drawing scale (>1 or <1 or $=1$ or \simeq)
- 2) If we want to divide L.E. 180 among 3 sisters in the ratio 3 : 1 : 2, then the greatest share = L.E. (20 or 60 or 90 or 120)
- 3) If the perimeter of one of the faces of a cube is 16 cm, then its volume = cm^3 .
(4 or 16 or 64 or 144)
- 4) If $\frac{Y}{36} = \frac{8}{9}$, then $Y =$ (36 or 28 or 32 or 14)
- 5) $0.003 \text{ m}^3 + 2 \text{ L} =$ dm^3 . (2.003 or 5 or 32 or 2.03)
- 6) The scale = $\frac{\text{the drawing length}}{\text{the real length}}$ (drawing or real or length or height)
- 7) is dividing anything according to a given ratio.
(Proportional division or Ratio or Division or Profit)
- 8) The ratio between the measures of the angles of a triangle is 1 : 2 : 3, then the difference between the greatest and smallest angle is (30° or 90° or 60°)
- 9) If $\frac{1}{x-5} = \frac{6}{12}$, then x (7 or 9 or 8 or 5)
- 10) If the length of a book and on a picture is 3 cm and its real length is 30 cm, then the drawing scale is (1 : 1 or 1 : 10 or 1 : 100 or 1 : 1000)
- 11) $2.3 \text{ L} =$ dm^3 . (2.3 or 23 or 2300 or 0.23)
- 12) If the numbers $x - 4$, 6, 1, 2, are in proportion, then the value of $x =$ (7 or 3 or 4 or 10)
- 13) If the sum of lengths of the edges of a cube is 60, then its volume = cm^3 .
(5 or 25 or 125 or 12)
- 14) If the volume of a cube is 64 cm^3 , then its edge = cm. (2 or 3 or 4 or 5)
- 15) If $\frac{1}{x} = \frac{2}{6} = \frac{Y}{12}$, then $x + Y =$ (3 or 7 or 4 or 10)

November Model Exam 2

Total mark

25

5

1 Complete each of the following:

- a) In proportion the product of means the product of extremes.
- b) A cube has edge(s).
- c) If the value of x makes 4, 7, $x - 1$, 14 in proportion, then x
- d) the volume of the inner space of a solid.
- e) If the capacity of a jar in the shape of a cube = $\frac{1}{10}$ of 80 L, then the sum of lengths of the edges of the cube = cm.

2 Choose the correct answer:

5

- a) 1 mL = L. (1000 or 10 or 0.01 or 0.001)
- b) The volume of a cube with side length 3 m is
(9 m³ or 30 m³ or 60 cm³ or 27 m³)
- c) If $\frac{4}{5} = \frac{12}{15}$ then 4, 15 are called (means or ratio or proportion or extremes)
- d) 8.32 L = cm³. (8.32 or 8320 or 0.00832 or 832)
- e) $\frac{x+4}{9} = \frac{2}{3}$, then $x =$ (2 or 4 or 3 or 6)

3 If the ratios 2 : 9, 4 : x and y : 27 are equal, find $x - y$.

5

4 If the real length of the killer whale is 7 m, an underwater photographer took a picture of it with scale 1 : 140, find the length of it in this picture in cm.

5

5 A cubic box with inner side length 0.5 m, if we want to put small cubes of cheese with side length 5 cm inside it, find the number of the cubes of cheese.

5

December Model Exam 1

Total mark

15

Choose the correct answer:

- 1) If Ahmed bought an old TV set for 900 pounds and spent 300 pounds to repair it, then sold it for 1500 pounds, then the percentage of profit is
(30% or 25% or 40% or 0.6%)
- 2) If the range of a set is 25 and the maximum value is 60, then the minimum value =
(25 or 35 or 85 or 30)
- 3) 0.65 in the percentage form is
(65 or 65% or 0.65% or 6.5)
- 4) We use the frequency to represent data by drawing a free hand curve.
(curve or polygon or line or circle)
- 5) If a seller bought 80 kg of banana for 800 pounds, then sold them for 1000 pounds, then the percentage of profit for each kg is
(25% or 80 kg or 30% or 75%)
- 6) The following data is about the favourite colour for 20 students.
By using the following data, answer the following questions:

Colour	Red	Blue	Yellow	White
Number of students	5	6	2	7

- The most favourite colour is
(red or blue or yellow or white)
- 7) $\frac{1}{4} = \dots\dots\dots$
(25% or 30% or 10% or 35%)
- 8) If the percentage of successful students in an exam is 90%, the percentage of failure students =
(25% or 30% or 10% or 35%)
- 9) $1.5 : \frac{5}{3}$ in the percentage form is
(50% or 70% or 90% or 100%)
- 10) data are the data written in the form of description.
(Descriptive or Quantitative or Numerical or Solved)
- 11) If a box of oranges is bought for 500 pounds and sold for 300 pounds, then the percentage of loss is
(50% or 40% or 30%)
- 12) $34\% + \frac{1}{5} = \dots\dots\dots\%$
(39 or 54 or 35 or $\frac{34}{5}$)
- 13) If $\frac{A}{x} = \frac{B}{Y}$, then $AY = \dots\dots\dots$
(AB or B x or x Y or BY)
- 14) $100\% = \dots\dots\dots$
(0.1 or 0.01 or 1 or 100)
- 15) Number of sons is a/an data. (descriptive or word or quantitative or equal)

December Model Exam 2

Total mark

25

5

1 Complete each of the following:

- a) The range of the following set of data 6, 9, 14, 2, 7, 10, 13, 4 is
- b) If $\frac{x-2}{10} = 40\%$, then $x = \dots\dots\dots$
- c) $17\frac{1}{5}\% = \dots\dots\dots$ (in decimals)
- d) The maximum value = 40, the minimum value = 12, then the range =
- e) The length of the set = $\frac{\text{the range}}{\dots\dots\dots}$

2 Choose the correct answer:

- a) $\frac{1}{5} + 0.25 = \dots\dots\dots\%$. (5.25 or 25 or 30 or 45)
- b) If 140 is 70% of a number, then 11% of this number is
(22 or 200 or 11 or 10.78)
- c) $4.2 : \frac{560}{100}$ in the percentage form is (42% or 56% or 75% or 50%)
- d) The of a set = $\frac{\text{lower limit} + \text{upper limit}}{2}$ (centre or frequency or vertical or range)
- e) All the following data are quantitative except
(age or height or name or weight)

3 Find the ratio between 40% of 210 to 16% of 700 in its simplest form.

4 If a fruitseller bought 500 kg of apple for 20000 pounds, a part of them went rotten and he sold the rest for 1000 pounds, find the percentage of his loss.

5 The following table shows the temperature degrees expected for 30 cities in one day:

Temperature degrees	5 –	10 –	Y –	20 –	25 –	30 –	35 –
Number of cities	2	3	3	5	X	9	Z

- a) Find the value of Y.
- b) Find the value of X and Z if $X : Z = 1 : 3$
- c) What's the number of cities whose temperature degrees are 30 degrees and more?

Model Tests from the School Book

Model

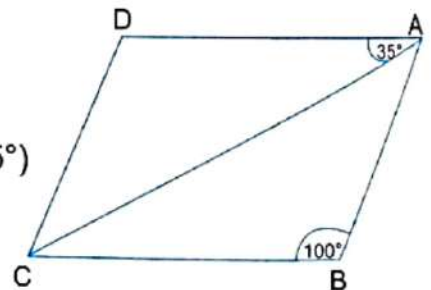
1

1 Complete each of the following:

- 1) $1.5 \text{ litres} + 0.5 \text{ dm}^3 + 500 \text{ cm}^3 = \dots\dots\dots$ litres.
- 2) If the volume of a cuboid is 64 cm^3 and the area of its base is 16 cm^2 ,
then its height = $\dots\dots\dots$ cm.
- 3) If the real length of an insect is 0.3 millimetre and its length in the picture is 4.5 cm,
then the drawing scale = $\dots\dots\dots$: $\dots\dots\dots$
- 4) The area of the triangle = $\frac{1}{2} \dots\dots\dots \times \dots\dots\dots$

2 Choose the correct answer:

- 1) The range for the set of values 7, 3, 6, 9 and 5 is $\dots\dots\dots$ (4 or 6 or 2 or 12)
- 2) $\frac{3}{4} = \dots\dots\dots$ (as a decimal fraction) (0.2 or 0.5 or 0.25 or 0.75)
- 3) A tractor ploughs 28 feddans in 4 hours, then the time which is needed to plough
42 feddans = $\dots\dots\dots$ hours. (4 or 6 or 7 or 8)
- 4) In the opposite figure:
ABCD is a parallelogram,
 $m(\angle ACD) = \dots\dots\dots$ (35° or 45° or 100° or 135°)



- 3 a) A container has 12 litres of oil. We need to distribute them on small bottles with
a capacity 400 cm^3 each. **Calculate the number of needed bottles.**
- b) **Calculate the selling price** of a set of electric devices which are bought for 72000
pounds with a profit of 12%.

- 4 a) If the ratio between the measures of the angles of a triangle is 2 : 3 : 4, **calculate the measure of each angle of the triangle.**

- b) A metallic cube whose edge length is 12 cm, we want to melt and convert it to a number of cuboid alloys of dimensions 3 cm, 4 cm and 6 cm.

Calculate the number of alloys which can be obtained.

- 5 a) Two persons started a business. The first paid L.E. 5000, and the second paid L.E. 8000. At the end of the year, the net profit was L.E. 3900. **Calculate the share of each in the profit.**

- b) The following table shows the marks of 100 pupils in one month in mathematics.

Marks	10 –	20 –	30 –	40 – 50	Total
Number of pupils	15	30	40	15	100

Draw the frequency curve for this distribution.

Model 2

1 Choose the correct answer:

- 1) If one of the angles of the parallelogram is right, then the resulting figure is
(rectangle **or** square **or** rhombus **or** cube)
a $(4\frac{1}{5} \text{ **or** } 3\frac{2}{5} \text{ **or** } 4\frac{4}{5} \text{ **or** } 2\frac{4}{5})$
- 2) $\frac{24}{5} = \dots\dots\dots$
- 3) If the marks of 6 pupils in one test are 29, 33, 57, 40, 36 and 49, then the range
for these marks = $(32 \text{ **or** } 33 \text{ **or** } 28 \text{ **or** } 86)$
 $(16 \text{ **or** } 18 \text{ **or** } 20 \text{ **or** } 22)$
- 4) If $\frac{4}{6} = \frac{12}{x}$, then $x + 2 = \dots\dots\dots$

2 Complete each of the following:

- 1) $65 \text{ dm}^3 = \dots\dots\dots$ litres.
- 2) If a wooden box is in the shape of a cube whose outer volume is 1000 cm^3 and its capacity is 729 cm^3 , then the volume of the wood = cm^3 .
- 3) The following table shows the marks of 50 pupils in mathematics. Then the number of pupils who obtained less than 40 marks = pupils.

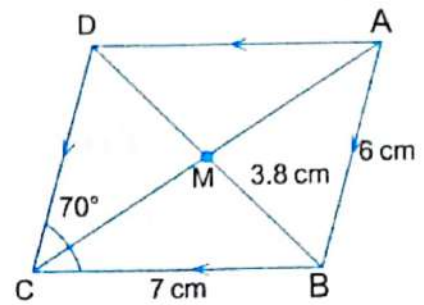
Marks	10 –	20 –	30 –	40 – 50	Total
Number of pupils	5	15	20	10	50

- 4) If the height of a fence of a villa on a map is 5 cm and its real height is 6 metres, then the drawing scale = :
- 3 a) Three persons started a project. The first paid L.E. 15000, the second paid L.E. 25 000 and the third paid L.E. 20 000. At the end of the year, the net profit was L.E. 5520. **Calculate the share of each one in the profit.**
- b) 10 litres of water is poured in a cuboid vessel with a square base of side length 25 cm. **Calculate the height of water in the vessel.**
- 4 a) The number of pupils in a primary school is 360 pupils. If the ratio between the number of boys to the number of girls is 1 : 2, **calculate the numbers of boys and girls.**

- b) In the opposite figure: ABCD is a parallelogram in which $AB = 6$ cm, $BC = 7$ cm, $BM = 3.8$ cm, $m(\angle C) = 70^\circ$. Without using the protractor,

find:

- 1) $m(\angle ADC)$.
- 2) The perimeter of $\triangle BCD$.



- 5 a) Heba bought a mobile phone for L.E. 660 with a discount 15%. **Calculate the original price of the mobile phone.**

- b) The following table shows the number of hours which 40 pupils spend studying their lessons.

Number of hours	1 –	2 –	3 –	4 –	5 – 6	Total
Number of pupils	6	3	8	12	11	40

Express these data by the frequency curve.

Model 3

For Students with Special Needs

1 Complete the following statements:

- 1) 5000 grams : 8 kilograms = : (in the simplest form)
- 2) $\frac{3}{10} = \dots\dots\dots\%$
- 3) The volume of a cuboid = the area of its base \times
- 4) 3 litres = cm^3 .

2 Choose the correct answer:

- 1) The range of the set of values 50 , 25 , 35 and 20 is (10 or 20 or 30)
- 2) If $\frac{2}{3} = \frac{10}{x}$, then $x = \dots\dots\dots$ (6 or 15 or 20)
- 3) The diagonals are perpendicular in the
(rectangle or square or parallelogram)
- 4) If the real length is 6 m and the drawing length is 6 cm, then the drawing scale is (1:10 or 1:1000 or 1:100)

3 Join from column (A) to what suits from column (B):

	A	B
1	The cube has edges.	a) minimization
2	If the drawing scale < 1 , this expresses	b) 12
3	The ratio between the side length of the square and its perimeter = :	c) 90
4	All the angles of the rectangle are equal in measure and the measure of each of them = $^\circ$	d) 1 : 4

4 Put (✓) or (X):

- 1) The numbers 1, 2, 6 and 12 are proportional numbers. ()
- 2) If the number of boys was 35% from the total number of the pupils then, the number of the girls is 20%. ()

- 3) The favourite colour is descriptive data. ()
- 4) The volume of a cube of edge length 3 cm = 9 cm^3 . ()

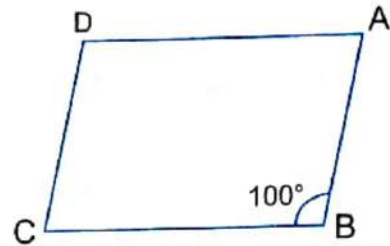
5 a) **Complete the following statements:**

(1) If $A : B = 2 : 3$, $B : C = 3 : 5$, then $A : C = \dots\dots\dots$

(2) In the opposite figure:

ABCD is a parallelogram,

$m(\angle D) = \dots\dots\dots^\circ$.



b) **The following table shows the marks of 50 students in one month in maths:**

Marks	10 –	20 –	30 –	40 – 50	Total
Number of students	6	10	20	14	50

Complete:

- (1) The number of students whose marks are less than 20 = $\dots\dots\dots$ students.
- (2) The number of students whose marks are 40 or more = $\dots\dots\dots$ students.

Al-Adwaa MCQ Model Exams

Model Test


1

Choose the correct answer:

- 1) A family spends L.E. 480 in 6 days, the rate of what the family spends daily is L.E. (80 or 60 or 30 or 40)
..... per day.
- 2) The volume of a cuboid box of length 3 cm, width 4 cm and height 9 cm = cm³.
(108 or 16 or 20 or 349)
- 3) 0.3 : 0.45 in the simplest form is
(3 : 45 or 2 : 3 or 3 : 2 or 45 : 3)
- 4) The data written in numbers is
(descriptive data or quantitative data)
- 5) The perimeter of the = the length of its side \times 4
(rhombus or rectangle or triangle or parallelogram)
- 6) 3, 7, 6, 14 are proportional. (.....)
(True or False)
- 7) It's a sequence of symbols or shapes arranged according to a certain system
(addition or pattern or subtraction)
- 8) The ratio among 2.1 : 0.49 : 1.4 in its simplest form is
(3 : 7 : 2 or 30 : 7 : 20 or 30 : 70 : 20)
- 9) The is any object that occupies a room in the space.
(shape or solid or cuboid or cube)
- 10) $2b = 3a$, then $a : b =$
(3 : 2 or 5 : 3 or 3 : 5 or 2 : 3)
- 11) The solid in which all dimensions are equal is a (cube or cuboid or prism)
- 12) The percentage is a ratio, its second term is (10 or 1000 or 100 or 10 000)
- 13) $\frac{2}{5} = \frac{18}{\dots}$
(25 or 30 or 35 or 45)
- 14) 1000 000 mL =
(1 m³ or 1 L or 1 cm³ or 1 dm)
- 15) If the drawing length of an object is 2 cm and its real length is 20 metres, then the
drawing scale =
(1 : 10 or 1 : 100 or 1 : 1000)
- 16) 5000 grams : 8 kilograms =
(5 : 80 or 50 : 8 or 5 : 8)
- 17) One =
(60% or 100% or 1% or 10%)
- 18) If the ratio between two numbers is 7 : 2 and the second number is 12, then the first
number is
(14 or 24 or 41 or 42)
- 19) = maximum value - minimum value.
(The range or The frequency or The number of the set)
- 20) A computer with price L.E. 2000 at 15% discount, then the price after discount
= L.E.
(1700 or 1600 or 1800 or 1900)

Model Test 2

Choose the correct answer:

- 1) The age is a (descriptive data **or** quantitative data **or** 30 **or** 40)
- 2) = $\frac{\text{the range}}{\text{length of the set}}$ (The range **or** The frequency **or** The number of the set)
- 3) A painter paints a wall of area 100 m^2 in 8 hours, then his rate of work = m^2/hr .
(12 **or** 12.5 **or** 12.55)
- 4) $1 \text{ m}^3 = \dots\dots\dots \text{L}$. (10 **or** 100 **or** 1000)
- 5) If 2, 5, x and 15 are proportional, then $x = \dots\dots\dots$ (2 **or** 5 **or** 6 **or** 15)
- 6) If the height of a pupil in a picture is 12 cm and his real height is 1.2 metres, then the drawing scale = 1 : (10 **or** 100 **or** 1000)
- 7) A is a geometrical solid. (Cone **or** Laptop **or** Car)
- 8) If $A : B = 1 : 2$, $B : C = 3 : 5$, then $A : C = \dots\dots\dots$ (1 : 5 **or** 3 : 10 **or** 30 : 10)
- 9) $1.4 : 42$ in its simplest form is (14 : 42 **or** 42 : 14 **or** 1 : 30 **or** 30 : 1)
- 10) The volume of a cube if the perimeter of one of its faces is 16 cm =
(16 **or** 4 **or** 64)
- 11) If 5, 7, 25, a are proportional, then $a = \dots\dots\dots$ (30 **or** 32 **or** 35)
- 12) The area of the = side length X itself. (triangle **or** square **or** rectangle)
- 13) $32 : 48 : 16$ in the simplest form is (3 : 2 : 1 **or** 2 : 3 : 1 **or** 1 : 2 : 3)
- 14)  (\triangle **or** ∇ **or** \triangleleft **or** \triangleright)
- 15) If the volume of a cuboid box is 30 cm^3 and its height is 5 cm, then the area of its base = cm^2 . (6 **or** 7 **or** 8)
- 16) $\frac{\dots\dots\dots}{9} = \frac{2}{3}$ (6 **or** 2 **or** 3)
- 17) + 35% = 100% (65 **or** 65% **or** 135%)
- 18) If x is half of b then $x : b = \dots\dots\dots$ (2 : 3 **or** 3 : 6 **or** 2 : 1 **or** 8 : 4)
- 19) In the parallelogram, the sum of the measures of any two consecutive angles = $^\circ$ (45 **or** 90 **or** 180 **or** 360)
- 20) If the perimeter of a rectangle is 32 cm and the ratio between its length to its width is 5 : 3, find each of its length and its width (10,6 **or** 16,8 **or** 5,8 **or** 6)





Model Test 3

Choose the correct answer:

- 1) The cuboid has edges. (6 or 12 or 8)
- 2) The age is a data. (descriptive or quantitative)
- 3) $1 - (25\% + 30\%) = \dots\dots\dots\%$. (50 or 45 or 40)
- 4) $4.5 : 1.25 : 6$ in its simplest form is (5 : 18 : 24 or 24 : 5 : 18 or 18 : 5 : 24)
- 5) $3 \text{ m} : 50 \text{ cm} = \dots\dots\dots$: (3 : 5 or 6 : 1 or 3 : 50)
- 6) If 24 machines irrigate 256 feddans, then the rate of what each machine irrigates is (10 $\frac{3}{2}$ or 10 $\frac{2}{3}$ or 10)
- 7) 18 kirats : 1 feddan = (1 : 2 or 3 : 8 or 1 : 24 or 3 : 4)
- 8) $1 \text{ dm}^3 = \dots\dots\dots \text{ cm}^3$. (10 or 100 or 1000)
- 9) $2\frac{2}{5} : 1\frac{1}{3}$ in its simplest form is (5 : 4 or 22 : 5 or 9 : 5 or 22 : 11)
- 10) 15, 20, 4, 3 are proportional. (.....) (True or false)
- 11) The range of the set of values 50, 60, 35, 25, 20 is (40 or 30 or 20)
- 12) The ratio between 5 and 7 is (7 : 6 or 5 : 7 or 5 : 10 or 10 : 7)
- 13) The volume of a cube if the sum of lengths of all its edges is 144 cm = cm^3 . (12 or 144 or 1728)
- 14) $1 \text{ mm}^3 = \dots\dots\dots \text{ cm}^3$. (1000 or 0.001 or 10 or 0.1)
- 15) In case of D.L. > R.L. (enlargement or reduction)
- 16) $40\% = \dots\dots\dots$ ($\frac{4}{100}$ or $\frac{2}{5}$ or $\frac{5}{2}$)
- 17) $\frac{7}{2} = \frac{14}{\dots\dots\dots}$ (1 or 2 or 3 or 4)
- 18) The diagonals of the rhombus are (parallel or perpendicular or equal)
- 19) If the sum of two numbers equals 105 and the ratio between them is 2 : 3, then the greater number is (84 or 63 or 42 or 21)
- 20) 1 litre = dm^3 . (1 or 100 or 1000)

Model Test 4





Choose the correct answer:

- 1) The weight is a data. (descriptive **or** quantitative)
- 2) If 95 is the maximum value in a given data and the range of these data equals 40, then the minimum value is (40 **or** 50 **or** 55)
- 3) $1 \text{ m}^3 = \dots\dots\dots \text{ cm}^3$. (100 **or** 10 000 **or** 1000 000)
- 4) If the ratio between two numbers is 1 : 3 and the greatest one is 27, then the other number is (3 **or** 27 **or** 9 **or** 1)
- 5) $\frac{7}{25} = \dots\dots\dots$ (80% **or** 55% **or** 28%)
- 6) $\frac{3}{19} = \frac{\dots}{38}$ (6 **or** 5 **or** 8 **or** 1)
- 7) The diagonals of the rectangle are (perpendicular **or** parallel **or** equal)
- 8) The volume of a cube of edge length 6 cm = cm^3 . (6 **or** 36 **or** 216)
- 9) If $a = \frac{6}{5}b$ then $b : a = \dots\dots\dots$ (8 : 5 **or** 5 : 6 **or** 3 **or** 2 **or** 6 : 5)
- 10) 16 kirats : 1 feddan = : (3 : 2 **or** 1 : 2 **or** 16 : 1 **or** 2 : 3)
- 11) In case of R.L. > D.L. (enlargement **or** reduction)
- 12) 1 litre = mL. (10 **or** 100 **or** 1000)
- 13) If a car covers 360 km in 4 hours, then its speed = km/hr. (80 **or** 90 **or** 100)
- 14) If the dimensions of a cuboid are equal, then it's called a (cube **or** cuboid **or** prism)
- 15) 1 : 1.25 in its simplest form is (5 : 4 : 4 : 5 **or** 1 : 125 **or** 10 : 25)
- 16)  ( **or**  **or** )
- 17) $\frac{x+3}{5} = \frac{8}{10}$, then $x = \dots\dots\dots$ (1 **or** 2 **or** 3)
- 18) A cuboid has faces. (6 **or** 2 **or** 8)
- 19) If $\frac{x}{18} = 10\%$, then $x = \dots\dots\dots$ ($\frac{6}{5}$ **or** $\frac{9}{5}$ **or** $\frac{10}{5}$ **or** $\frac{9}{50}$)
- 20) If $A : B = 3 : 4$, $B : C = 4 : 5$, then $A : B : C = \dots\dots\dots$ (3 : 4 : 5 **or** 4 : 5 : 3 **or** 5 : 3 : 4)

Model Test

5

Choose the correct answer:

- 1) If a is a third of b , then $a : b = \dots\dots\dots$ (1 : 3 or 3 : 1 or 2 : 3)
- 2) The two diagonals are equal in length and not perpendicular in a $\dots\dots\dots$
(parallelogram or rectangle or square or rhombus)
(0.1 or 0.01 or 0.001)
- 3) $1 \text{ mm}^3 = \dots\dots\dots \text{ cm}^3$. (1.6 or 160 or 32)
- 4) $\frac{16}{5} = \frac{\dots}{10}$ (descriptive or quantitative)
- 5) The birthplace is a $\dots\dots\dots$ data.
- 6) If the range of some values = 50 and the number of sets = 10, then the length of set
= $\dots\dots\dots$ (50 or 5 or 500)
- 7) The numbers 6, x , 10, and 3 are proportional, then $x = \dots\dots\dots$ (1.8 or 18 or 1)
- 8) If $A : B = 3 : 2$, $B : C = 5 : 7$, then $A : B : C = \dots\dots\dots$
(10 : 15 : 14 or 14 : 10 : 15 or 15 : 10 : 14)
- 9) 18% of 300 = $\dots\dots\dots$ (45 or 54 or 60)
- 10) If $\frac{5x-3}{18} = \frac{2}{3}$, then $x = \dots\dots\dots$ (1 or 2 or 3)
- 11) The volume of a cube if the area of its face is $49 \text{ cm}^2 = \dots\dots\dots \text{ cm}^3$. (7 or 49 or 343)
- 12) $1.2 : 1.3$ in its simplest form is $\dots\dots\dots$ (13 : 12 or 1 : 3 or 2 : 3 or 12 : 13)
- 13) $\dots\dots\dots = \frac{\text{the drawing length}}{\text{the real length}}$
(The drawing scale or Minimization or Enlargement)
- 14)  $\dots\dots\dots$ ( or  or )
- 15) $0.14 = \dots\dots\dots$ (14 or 140 or 14%)
- 16) A water tap leaks 20 litres of water in 4 hours, then the rate of leakage per hour
= $\dots\dots\dots$ (4 or 5 or 16)
- 17) The volume of a cuboid room with dimensions 4 m, 3 m, and 5 m = $\dots\dots\dots \text{ cm}^3$.
(50 or 60 or 70)
- 18) $1 \text{ mL} = \dots\dots\dots \text{ cm}^3$. (1 or 10 or 100)
- 19) $2 \text{ cm} : 12 \text{ mm} = \dots\dots\dots$ (3 : 5 or 5 : 3 or 1 : 6)
- 20) The number of girls in a school = $\frac{1}{2}$ the number of all students, then the ratio
between girls to boys = $\dots\dots\dots$ (1 : 2 or 1 : 1 or 4 : 1 or 2 : 1)

MCQ Governorates Exams (2020 /2021)

Cairo

1

(Maths Inspection)

Choose the correct answer:

- 1) If the real length of an insect is 5 mm, then its length under a magnifying lens with drawing scale 20 : 1 is cm. (100 or 10 or 20 or 0.5)
- 2) If 50% of $x = 80$, then $x =$ (160 or 40 or 100 or 50)
- 3) The sum of the measures of any two consecutive angles in the parallelogram = (90° or 360° or 108° or 180°)
- 4) The ratio between 20 hours and one day = (5 : 6 or 6 : 1 or 6 : 5 or 2 : 5)
- 5) The following data are all descriptive except (colour or age or name or nationality)
- 6) If $\frac{x+3}{5} = \frac{4}{5}$, then $x + 2 =$ (1 or 5 or 7 or 3)
- 7) 1.65 litres + 0.5 dm³ = litres. (1.7 or 2.15 or 1.1.07 or 1655)

Cairo

2

(Maths Inspection)

Choose the correct answer:

- 1) 2 kg : 1500 gm = (4 : 3 or 3 : 4 or 4 : 5 or 5 : 4)
- 2) $\frac{1}{2} : \frac{1}{3} =$ (2 : 3 or 3 : 2 or 5 : 6 or 6 : 5)
- 3) $\frac{3}{4} =$ %. (75 or 95 or 85 or 65)
- 4) If $\frac{x}{3} = \frac{4}{3}$, then $x =$ (3 or 4 or 5 or 8)
- 5) The diagonals are equal in length in a (rectangle or rhombus or trapezium or triangle)
- 6) All sides are equal in length in the (rectangle or rhombus or trapezium or parallelogram)
- 7) The range of values 9, 7, 6, 5 and 3 is (6 or 5 or 4 or 3)

Cairo

3

(Misr Al-Gadida)

Choose the correct answer:

- 1) The ratio between 1200 grams and 2 kilograms = (3 : 4 or 4 : 5 or 3 : 5 or 1 : 5)
- 2) 20% of = 180 (90 or 900 or 1200 or 1600)
- 3) The distance between two cities on a map is 12 centimetres and the real distance between them is 40 kilometres, then the drawing scale of this map equals %. (1 : 5000000 or 1 : 2500000 3 : 500000 3 : 1000000)
- 4) If $\frac{5}{x} = \frac{20}{28}$, then $x =$ (5 or 6 or 7 or 10)
- 5) The volume of a cuboid whose dimensions are 4 cm, 6 cm and 5 cm is cm³. (60 or 120 or 280 or 300)
- 6) The range of the data: 12, 5, 9, 7 and 15 equals (15 or 5 or 10 or 12)
- 7) The two diagonals are equal in length and perpendicular in a (parallelogram or rectangle or rhombus or square)

Giza 4 (Dokki)

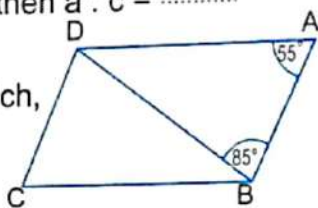
Choose the correct answer:

- $\frac{3}{4} = \dots\dots\dots$ (in the decimal form) (0.2 or 0.5 or 0.25 or 0.75)
- If $\frac{2}{5} = \frac{x}{15}$, then $3x = \dots\dots\dots$ (2 or 5 or 15 or 18)
- If the volume of cuboid is 27 cm^3 and the area of its base is 9 cm^2 , then its height is $\dots\dots\dots \text{ cm}$. (3 or 4 or 5 or 6)
- $1\frac{3}{4} = \dots\dots\dots\%$. (25 or 50 or 75 or 175)
- If one angle of the parallelogram is right, then the figure is called a $\dots\dots\dots$ (rectangle or square or rhombus or cube)
- The range of the values (7, 2, 6, 9 and 5) is $\dots\dots\dots$ (4 or 3 or 6 or 7)
- If the length in reality is 6 metres and the length in drawing is 6 cm, then the drawing scale is $\dots\dots\dots$ (1 : 10 or 1 : 100 or 1 : 1000)

Giza 5 (Al-Agouza Directorate)

Choose the correct answer:

- 4.6 litres = $\dots\dots\dots \text{ cm}^3$. (46 or 460 or 4600 or 4.6)
- If $a : b = 1 : 3$ and $b : c = 3 : 2$, then $a : c = \dots\dots\dots$ (1 : 3 or 1 : 2 or 3 : 1 or 2 : 3)
- In the opposite figure:
ABCD is a parallelogram in which,
 $m(\angle A) = 55^\circ$, $m(\angle ABD) = 85^\circ$,
then $m(\angle DBC) = \dots\dots\dots^\circ$ (50° or 40° or 80° or 55°)
- The ratio of height of Magda, Huda is 8 : 7 if the height of Huda is 140 cm, then the height of Magda is $\dots\dots\dots$ (160 cm or 150 cm or 20 cm or 90 cm)
- If the volume of a cuboid equals 560 cm^3 and its base area = 40 cm^2 , then its height equals $\dots\dots\dots \text{ cm}$. (50 or 14 or 80 or 20)
- The two diagonals are equal in length and not perpendicular in a $\dots\dots\dots$ (parallelogram or rectangle or rhombus or square)
- If the numbers 2, 3, 10 and x are in proportion, then $x = \dots\dots\dots$ (10 or 13 or 14 or 15)



Giza 6 (Zayed)

Choose the correct answer:

- If $\frac{4}{6} = \frac{12}{x}$, then $x = \dots\dots\dots$ (16 or 18 or 20 or 22)
- 3 litres = $\dots\dots\dots \text{ cm}^3$. (3 or 30 or 300 or 3000)
- $1 - 45\% = \dots\dots\dots\%$. (55 or 45 or 40 or 50)
- Range for the values 7, 3, 6, 9 and 5 = $\dots\dots\dots$ (3 or 4 or 5 or 6)
- $\frac{1}{2} = \dots\dots\dots$ (as a decimal) (0.2 or 0.5 or 0.25 or 0.75)
- The volume of a cuboid whose dimensions are 2 cm, 3 cm and 5 cm = $\dots\dots \text{ cm}^3$. (10 or 25 or 30 or 50)
- The volume of a cube with edge length 3 cm = $\dots\dots\dots \text{ cm}^3$. (27 or 9 or 15 or 3)

Beheira

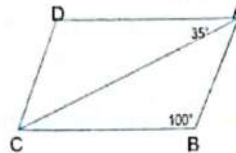


(Maths Inspection)

Choose the correct answer:

- 1) The ratio between the two numbers 6 : 9 is (1 : 3 or 1 : 2 or 2 : 3 or 3 : 1)
- 2) $42000 \text{ cm}^3 = \dots\dots\dots$ litres. (42 or 42000 or 420 or 4200)
- 3) If the numbers 4, x , 12 and 18 are proportional, then $x = \dots\dots\dots$ (2 or 3 or 5 or 54)
- 4) The following data are descriptive except (favourite colour or birthplace or age or blood type)
- 5) $\frac{9}{10} = \dots\dots\dots\%$. (40 or 45 or 60 or 90)
- 6) A cube of edge length 5 cm, then its volume = cm^3 . (25 or 10 or 125 or 250)
- 7) In the opposite figure:

ABCD is a parallelogram.

 $m(\angle ACD) = \dots\dots\dots^\circ$.

(35 or 45 or 100 or 180)

Beheira



(Rahmania Directorate)

Choose the correct answer:

- 1) The measuring unit of capacity is (volume or capacity or cm or litre)
- 2) If the sum of lengths of all edges of a cube is 60 cm, then its volume = cm^3 . (120 or 125 or 150 or 225)
- 3) The ratio between the side length of a square and its perimeter is (1 : 2 or 1 : 3 or 1 : 5 or 1 : 4)
- 4) The two diagonals are equal in length and perpendicular in a (parallelogram or rectangle or square or rhombus)
- 5) The range of the values (7, 3, 9 and 5) is (2 or 4 or 6 or 8)
- 6) $12 \text{ dm}^3 = \dots\dots\dots$ litres. (120 or 1200 or 12000 or 12)
- 7) $\frac{1}{2} : \frac{1}{3} = \dots\dots\dots$ (3 : 2 or 2 : 3 or 1 : 2 or 2 : 1)

Dameitta



(Dameitta Educational Zone)

Choose the correct answer:

- 1) The range of the set of values 7, 3, 6, 9 and 5 is (2 or 4 or 6 or 12)
- 2) The number of altitudes of any triangle = (1 or 2 or 3 or 4)
- 3) If the drawing scale < 1 , this expresses (equality or maximization or enlargement or minimization)
- 4) The diagonals are perpendicular in a (rectangle or trapezoid or rhombus or parallelogram)
- 5) The numbers 1, 2, 6 and are proportional. (2 or 6 or 8 or 12)
- 6) If Adel scored 13 marks from 20 marks in an exam, then the percentage of the scored marks = (65% or 13% or 20% or 0.65%)
- 7) The volume of a cuboid of dimensions 12 cm, 10 cm, 8 cm the volume of a cube of edge length 10 cm. ($<$ or $>$ or $=$ or \geq)

Port Said



(Maths Inspection)

Choose the correct answer:

- 1) The range of the set of values 7, 3, 6, 9 and 5 is (2 or 4 or 6 or 12)
- 2) If the drawing scale < 1 , this expresses
(equality or maximization or enlargement or minimization)
(4 or 6 or 8 or 12)
- 3) The cube has edges.
- 4) The diagonals are perpendicular in a
(rectangle or trapezoid or rhombus or parallelogram)
- 5) The numbers 1, 2, 6 and are proportional. (2 or 6 or 8 or 12)
- 6) If Adel scored 13 marks from 20 marks in an exam, then the percentage of the scored marks = (65% or 13% or 20% or 0.65%)
- 7) The value of a cuboid of dimensions 12 cm, 10 cm, 8 cm the volume of a cube of edge length 10 cm. ($<$ or $>$ or $=$ or \geq)

Port Said



(North Educational Directorate)

Choose the correct answer:

- 1) The volume of cuboid = length \times \times height. (width or length or side or angle)
- 2) The range of the values (3, 8, 2 and 5) is (7 or Zero or 6 or one)
- 3) The area of triangle = $\frac{1}{2} \times$ base \times (angle or diagonal or height or side)
- 4) $\frac{3}{4} =$ (in the decimal form). (0.75 or 0.5 or 1.2 or 0.25)
- 5) If $\frac{1}{2} = \frac{3}{x}$, then $x =$ (3 or 6 or 4 or 5)
- 6) If $A : B = 2 : 3$, $B : C = 3 : 5$, then $A : C =$ (6 : 9 or 9 : 15 or 6 : 15 or 1 : 3)
- 7) $\frac{1}{2} =$ %. (50 or 25 or 35 or 75)

Suez



(Maths Inspection)

Choose the correct answer:

- 1) $\frac{3}{4} =$ %. (25 or 50 or 57 or 75)
- 2) The percentage is a ratio whose second term is (10 or 100 or 200 or 1000)
- 3) $40\% +$ $+ 30\% = 100\%$. (20% or 30% or 40% or 50%)
- 4) If the drawing scale is 1, this expresses minimization.
- 5) If $A : B = 3 : 4$, $B : C = 4 : 5$, then $A : C =$: ($>$ or $=$ or $<$ or \leq)
- 6) $35 : 50 =$: (in the simplest form) (3 : 4 or 3 : 5 or 4 : 3 or 5 : 4)
- 7) In the parallelogram, the sum of the measures of any two consecutive angles = (10 : 7 or 7 : 10 or 5 : 10 or 7 : 10)
(45° or 90° or 180° or 360°)

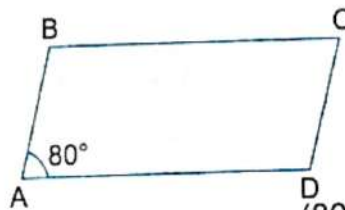
Combined Model Exams (Selected from 2019 Governorates Exams)

Exam

1

1 Choose the correct answer:

- 1) The following data are descriptive data except
(age **or** birthplace **or** favourite colour **or** address)
- 2) If $\frac{x}{5} = 60\%$, then $x =$ (60 **or** 30 **or** 3 **or** 1)
- 3) If the real length of an insect is 0.3 mm and its length in a picture is 4.5 cm,
then the drawing scale = (1 : 15 **or** 1 : 150 **or** 150 : 1 **or** 15 : 1)
- 4) 15 % of 400 = (40 **or** 70 **or** 80 **or** 60)
- 5) The sum of all edge lengths of a cube is 84 cm, then its volume = cm^3 .
(49 **or** 343 **or** 28 **or** 14)
- 6) $28 \text{ dm}^3 =$ cm^3 . (28 000 **or** 2 800 **or** 28 **or** 0.028)
- 7) The simplest form of the ratio $32 : 24 : 16 =$
(3 : 4 : 2 **or** 4 : 3 : 2 **or** 6 : 4 : 3 **or** 4 : 3 : 8)
- 8) ALMN is a parallelogram, then $m(\angle M) = m(\angle \dots\dots\dots)$. (A **or** L **or** M **or** N)
- 9) If $a : b = 1 : 4$ and $b : c = \frac{2}{3}$, then $a : c = \dots\dots\dots$ (1 : 2 **or** 2 : 5 **or** 1 : 6 **or** 1 : 3)
- 10) If Mona drinks 56 glasses of water weekly, then she drinks glasses of
water every day. (7 **or** 8 **or** 6 **or** 9)
- 11) In the opposite figure:
ABCD is a parallelogram, then
 $m(\angle B) = \dots\dots\dots^\circ$

(80° **or** 100° **or** 180° **or** 60°)

- 12) A cube has 6 faces, each of them is a
(rectangle **or** square **or** cuboid **or** cube)
- 13) If the range of value = 60 and the number of sets = 10, then
the length of set = (70 **or** 50 **or** 6 **or** 600)
- 14) 18 kirats : 2 feddans = : (1 : 2 **or** 3 : 8 **or** 1 : 24 **or** 18 : 2)

2 Complete the following:

- 15) The volume of a cuboid is 128 cm^3 and the area of its base is 16 cm^2 , then its
height = cm.

- 16) In a picture of a house if the height of the fence is 6 cm and the real height of the fence is 2.4 metres, then the drawing scale is :
- 17) 3.2 litres = cm^3 .
- 18) Volume of cube = \times \times
- 19) If 3, 10, x and 30 are proportional, then $x =$
- 20) 3000 m : 9 km = :
- 21) The range of the set of values 9, 4, 2, 6, 12 and 11 is
- 22) If 50 % of x equals 240, then $x =$

3 Answer the following questions:

- 23) Two persons started a commercial business, the first paid L.E. 5000 and the second paid L.E. 8000, at the end of the year the profit was L.E. 3900. **Calculate** the share of each one.
- 24) A cube of cheese of edge length 15 cm, is wanted to be divided into small cuboids, each of dimensions 3 cm, 5 cm and 1 cm. **Find** the number of the resulting small cuboids of cheese.
- 25) The following table shows the number of hours spent by 42 pupils to study their lessons daily:

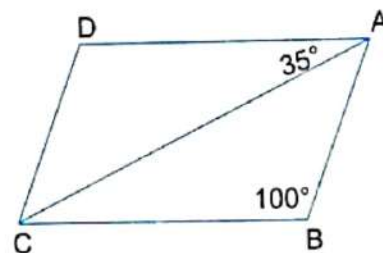
Number of hours	1 –	2 –	3 –	4 –	5 –	Total
Number of pupils	8	4	8	12	10	42

Draw the frequency curve of this distribution.



1 Choose the correct answer:

- 1) The following data are quantitative except
(age **or** weight **or** name **or** length)
- 2) The perimeter of one face of a cube is 20 cm, then its volume =
(5 cm **or** 25 cm² **or** 125 cm³ **or** 25 cm³)
- 3) If the values of the frequency distribution lie between 30 and 60, then the range of distribution is
(30 **or** 20 **or** 60 **or** 90)
- 4) 1.45 litres + 500 cm³ = litres. (1.5 **or** 1.95 **or** 2000 **or** 2)
- 5) A cuboid, its dimensions are 5 cm, 2 cm and 7 cm, then its volume = cm³.
(24 **or** 48 **or** 65 **or** 70)
- 6) 28% + 52% + = 1 (80% **or** 20% **or** 52% **or** 100%)
- 7) A map is drawn with a scale 1 : 200 000, if the real distance between two cities is 8 km, then the length between them on a map = cm. (4 **or** 5 **or** 8 **or** 6)
- 8) The ratio between the circumference of the circle and its diameter = :
(π : 1 **or** 2π : 1 **or** 1 : π **or** 1 : 2π)
- 9) If $a : b = 2 : 3$, $b : c = 6 : 7$, then $a : c =$: (7 : 4 **or** 4 : 7 **or** 12 : 7 **or** 6 : 7)
- 10) $\frac{2}{3} : 3\frac{1}{3} =$: (1 : 2 **or** 1 : 3 **or** 2 : 3 **or** 1 : 5)
- 11) 20% of pounds = 40 pounds. (800 **or** 200 **or** 8 **or** 20)
- 12) The ratio between 15 hours : one day = : (1 : 15 **or** 15 : 1 **or** 8 : 5 **or** 5 : 8)
- 13) In the opposite figure:
 $m(\angle ACD) =$
(35° **or** 55° **or** 45° **or** 60°)
- 14) The centimetre cube is a unit of measuring the
(length **or** area **or** volume **or** weight)



2 Complete the following:

- 15) If x , 16, 6 and 8 are proportional, then $x =$
- 16) The ratio between 16 hours and one day = :
- 17) $1 - (15\% + 32\%) =$ %.

- 18) $15000 \text{ dm}^3 = \dots\dots\dots$ litres.
- 19) If the dimensions of a cuboid are equal in length, then it's called a $\dots\dots\dots$
- 20) The range of the set of the values 7, 3, 5, 12 and 8 = $\dots\dots\dots$
- 21) If the volume of a cuboid = 300 cm^3 and its base area = 25 cm^2 , then its height = $\dots\dots\dots$ cm.
- 22) The percentage is a ratio its second term is $\dots\dots\dots$

3 Answer the following questions:

- 23) A man bought a mobile phone for 660 pounds with a discount of 20 %, **calculate** the price of the mobile phone before the discount.
- $\dots\dots\dots$
- 24) Three persons started a business, the first paid L.E. 15000, the second paid L.E. 25000 and the third paid L.E. 20000, if the profit at the end of the year was L.E. 6000, **calculate** the share of each of them in the profit.
- $\dots\dots\dots$
- 25) A man bought a flat for L.E. 290000, he sold it with a profit of 10 %. **Calculate** the selling price of the flat.
- $\dots\dots\dots$
- 26) The following table shows the number of hours spent by 40 pupils in studying their lessons daily.

Number of hours	1 –	2 –	3 –	4 –	5 – 6	Total
Number of pupils	6	3	8	12	11	40

Represent these data using the frequency curve.



Exam

3

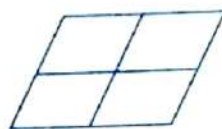
1 Choose the correct answer:

1) 8 hours : 3 days = 1 : (3 or 6 or 9 or 12)

2) If $\frac{5}{9} = \frac{15}{x}$, then $x =$ (3 or 5 or 15 or 27)

3) In the opposite figure:

The number of parallelograms
which can be obtained is



(4 or 5 or 7 or 9)

4) 1.2 litres + 800 cm³ = litres. (2 or 9.2 or 200 or 2000)

5) A car consumes 12 litres of fuel to cover a distance of 96 km.

How many litres are needed to cover a distance of 144 km? (10 or 16 or 18 or 20)

6) The volume of the cuboid whose height = 3 cm and the surface area

of its base = 12 cm² is (36 cm³ or 4 cm³ or 36 cm² or 4 cm²)7) $\frac{7}{20} =$ %. (25 or 35 or 40 or 45)

8) A factory produces 4000 cans of juice during 8 hours, then the rate of

the production is cans/hour. (400 or 500 or 600 or 800)

9) If the drawing scale is < 1 , then this expresses

(enlargement or congruency or reduction or otherwise)

10) 15 % of 400 = (40 or 70 or 80 or 60)

11) If $a : b = 2 : 3$ and $b : c = 5 : 6$, then $a : c =$:

(5 : 9 or 9 : 7 or 5 : 8 or 15 : 11)

12) The following data are quantitative except

(tallness or colour or age or weight)

13) The ratio between Ahmed's age to his father's age is 1 : 6, if Ahmed is 6 years

old, then Ahmed's father is years old. (32 or 36 or 39 or 42)

14) The range of the set of values 7, 3, 6, 9 and 5 is (2 or 4 or 6 or 12)

2 Complete the following:

15) $\frac{5}{4} : 2 =$: (in the simplest form)16) The volume of a cuboid with dimensions 10 cm, 8 cm and 7 cm = cm³.17) $1 - (15\% + 45\%) =$ %

18) If $A : B = 3 : 4$, $B : C = 4 : 5$, then $A : C = \dots : \dots$

19) Proportion is \dots

20) If the drawing scale is < 1 , then this expresses \dots

21) $\frac{1}{2} : \frac{1}{3} : \frac{1}{4} = \dots : \dots : \dots$

22)  \dots (in the same pattern)

3 Answer the following questions:

23) Two persons started a commercial business, the first paid 5000 pounds and the second paid 8000 pounds. At the end of the year, the profit was 3900 pounds. **Find** the share of each one of them of the profit.

24) 10 litres of water was poured in a vessel in the shape of a cuboid, its base is a square of side length 25 cm. **Find** the height of water in the vessel.

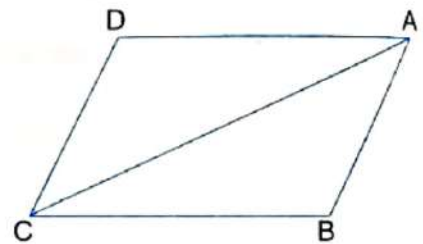
25) **In the opposite figure:**

ABCD is a parallelogram in which
 $m(\angle B) = 120^\circ$, $m(\angle BAC) = 35^\circ$

Find:

a) $m(\angle D) = \dots$

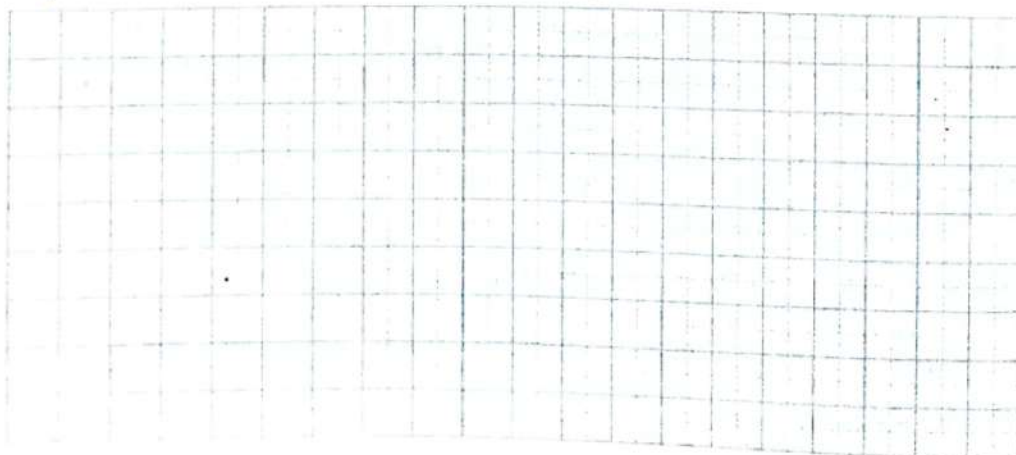
b) $m(\angle CAD) = \dots$



26) The following table shows the marks of 100 students in mathematics:

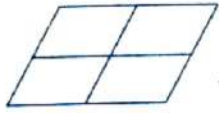
Marks	10 –	20 –	30 –	40 – 50	Total
Number of students	20	40	30	10	100

Represent these data by the frequency curve.



Exam 4

1 Choose the correct answer:

- 1) $16 : 48 = \dots : \dots$ (1 : 2 or 1 : 4 or 1 : 5 or 1 : 3)
- 2) $\frac{2}{5} = \dots\%$. (20 or 30 or 40 or 50)
- 3) The following data are descriptive data except
(favourite colour or age or name or birthplace)
- 4) The ratio among the measures of the angles of a triangle is 3 : 4 : 5, then
the measure of the greatest angle = (90 or 75 or 60 or 55)
- 5) $\frac{1}{2}$ kg : 700 gm (2 : 7 or 7 : 8 or 5 : 7 or -7 : 9)
- 6) $\frac{3}{4}$ litre = mL. (0.75 or 7.5 or 750 or 75)
- 7) The two diagonals are perpendicular in a
(parallelogram or rectangle or rhombus or triangle)
- 8) If $\frac{5}{8} = \frac{15}{x}$, then $x = \dots$ (8 or 24 or 10 or 12)
- 9) If the distance between two cities on a map is 3 cm and the real distance between them is 9 km, then the drawing scale of the map = 1 :
(3 or 3000 or 30000 or 300000)
- 10) The range of the values 23, 33, 57, 40 and 36 is (27 or 28 or 29 or 34)
- 11) $0.3 \text{ m}^3 = \dots \text{ dm}^3$. (3000 or 300 or 30 or 3)
- 12) $\frac{1}{2} : \frac{3}{4} : \frac{2}{3} = \dots : \dots : \dots$ (6 : 8 : 9 or 8 : 9 : 6 or 9 : 6 : 8 or 6 : 9 : 8)
- 13) The number of parallelograms
in the opposite figure is  (4 or 5 or 7 or 9)
- 14) A printer prints 15 sheets of paper in 3 minutes, then its rate =
sheets/minute. (5 or 3 or 45 or 0.5)

2 Complete the following:

- 15) is the parallelogram whose one of its angles is a right angle.
- 16) If the volume of a cuboid is 720 cm^3 and its height is 9 cm, then the area of its
base = cm^2 .
- 17) Drawing scale =

- 18) If the marked price of a TV is 2000 pounds, it has been sold for 1800 pounds after discount, then the percentage of the discount =%.
- 19) A factory produces 6300 bottles of soft drinks in 9 hours, then the rate of production = bottles/hour.
- 20) If $\frac{x}{5} = \frac{12}{10}$, then $x + 2 = \dots\dots\dots$
- 21) If the range of frequency distribution is 50 and the length of a set is 10, then the number of sets =
- 22) The volume of a cube whose edge length 1.5 dm = cm^3 .

3 Answer the following questions:

- 23) Two persons started a commercial business, the first paid L.E. 5000 and the second paid L.E. 8000. At the end of the year, the profit was L.E. 3900.

Calculate the share of each of them from the profit.

- 24) Heba bought a vacuum cleaner for 220 pounds with discount 20%.

Calculate the price before discount.

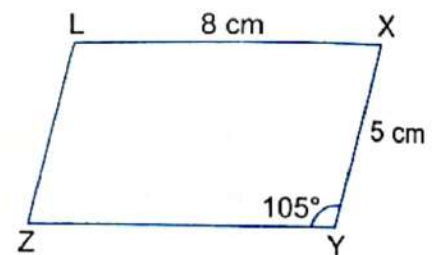
- 25) In the opposite figure:

XYZL is a parallelogram, **find**:

a) $m(\angle L) = \dots\dots\dots$

b) $m(\angle Z) = \dots\dots\dots$

c) The perimeter of parallelogram XYZL.



- 26) The table below represents the ages of 39 visitors:

Ages	10 –	20 –	30 –	40 –	50 –	Total
Visitors	6	8	11	9	5	39

Represent these data by the frequency curve.


Exam

5

1 Choose the correct answer:

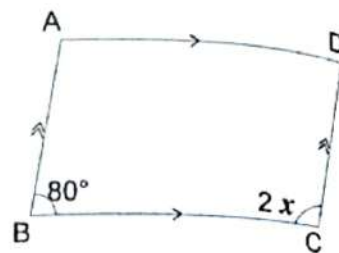
- 1) $100\% =$ (100 or 50 or 2 or 1)
- 2) is a unit of measuring capacity. (Metre or Kg or Litre or Minute)
- 3) If $\frac{2}{3} = \frac{8}{x}$, then $x =$ (6 or 8 or 12 or 24)
- 4) The diagonals are equal in length in a
(rectangle or rhombus or parallelogram)
- 5) The following data are quantitative data except
(age or height or weight or favourite food)
- 6) If $x : y = 1 : 2$, $y : z = 2 : 3$, then $x : z =$ (1 : 3 or 2 : 3 or 3 : 5 or 2 : 15)
- 7) $\frac{1}{4} : \frac{1}{3} =$ (4 : 3 or 3 : 4 or 1 : 4 or 1 : 3)
- 8) $3 : 4$ (as a decimal fraction) (0.3 or 0.4 or 0.5 or 0.75)
- 9) The fourth proportional of 3, 5 and 6 is (10 or 8 or 6 or 5)
- 10) The ratio between 750 grams and one kg is
(1 : 2 or 3 : 4 or 4 : 3 or 1 : 4)
- 11) $5 \text{ dm}^3 =$ litres. (5 or 5000 or 50 or 0.0005)
- 12) 35% from 2000 = (7000 or 700 or 70 or 35)
- 13) A car covers 150 km in 3 hours, then its speed is km/hour.
(450 or 150 or 100 or 50)
- 14) If the drawing scale is < 1 , this expresses
(equality or maximization or enlargement or minimization)

2 Complete the following:

- 15) The ratio of the side length of the square to its perimeter = :
- 16) $1 - (32\% + 27\%) =$ %.
- 17) The four sides are equal in length in and
- 18) If the numbers 3, $x - 1$, 5 and 20 are proportional, then $x =$
- 19) The ratio between the two numbers 16 and 48 =
- 20) A cube, the perimeter of its base is 40 cm, then its volume = cm^3 .
- 21) The following figure in this pattern  is

22) In the opposite figure:

ABCD is a parallelogram in which
 $m(\angle B) = 80^\circ$ and $m(\angle C) = 2x^\circ$,
 then the value of x in degrees =



3 Answer the following questions:

23) A trader bought a TV set for L.E. 4500 and sold it with a profit of 10%.

Find the selling price.

24) In the opposite figure:

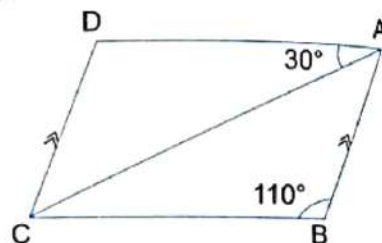
ABCD is a parallelogram in which
 $m(\angle DAC) = 30^\circ$, $m(\angle B) = 110^\circ$

Find:

a) $m(\angle D) =$

b) $m(\angle BAC) =$

c) $m(\angle ACD) =$



25) Adel bought a flat for 150000 pounds and sold it with 5% loss.

Find the selling price.

26) The table shows the money which the students donated for a hospital:

Amount	10 –	20 –	30 –	40 –	50 –	Total
Number of students	2	6	10	8	4	30

Draw the frequency curve.

Final Exams from Different Governorates (2019 - 2020)

1 Cairo - Helwan Educational Zone - Hafez Ibrahim Official School

1 Choose the correct answer:

- 1) The ratio between the side length of the square and its perimeter is
(1 : 4 or 1 : 3 or 4 : 1 or 3 : 1)
- 2) The ratio between 12 kirats and $1\frac{1}{2}$ feddans is (in the simplest form)
(1 : 3 or 2 : 3 or 3 : 4 or 4 : 5)
- 3) The ratio between 18 months and 3 years = (1 : 2 or 5 : 8 or 5 : 2 or 5 : 6)
- 4) If the ratio among the measures of the angles of a triangle is 1 : 2 : 3,
then the measure of the smallest angle = (30 or 50 or 40 or 15)
- 5) If the real length of a tree is 6 m and its drawing length is 3 cm, then the drawing
scale = (1 : 100 or 1 : 200 or 1 : 300 or 1 : 400)
- 6) $\frac{9}{20} =$ % . (35 or 45 or 30 or 40)
- 7) 35% of 200 pounds = pounds. (20 or 70 or 40 or 35)
- 8) The volume of the cuboid whose dimensions are 2 cm, 4 cm and 6 cm is
(60 cm³ or 30 cm³ or 120 cm³ or 48 cm³)
- 9) A cube, the perimeter of its base is 8 cm, then its volume = cm³.
(12 or 27 or 64 or 8)
- 10) 2.5 litres = cm³. (4000 or 1500 or 25000 or 2500)
- 11) The two diagonals are equal in length and perpendicular in a
(rectangle or parallelogram or rhombus or square)
- 12) is quantitative data.
(Favourite colour or Birthplace or Blood species or Age)
- 13) The following data are descriptive except
(colour or hobby or height or blood type)

2 Complete each of the following:

- 14) $\frac{1}{4} : 2\frac{1}{4} =$
- 15) If A : B = 2 : 3 and B : C = 2 : 5, then A : C =
- 16) If Ola drinks 21 glasses of milk weekly, then the rate of what she drinks daily is

17) If $\frac{2}{3} = \frac{4}{x}$, then $x = \dots\dots\dots$

18) The monthly salary of an employee is L.E. 5000, if he saves L.E. 600,
then the percentage of his savings = $\dots\dots\dots\%$.

19) In the parallelogram, the sum of the measures of any two consecutive angles
= $\dots\dots\dots$

20) $2 \text{ m}^3 = \dots\dots\dots \text{ dm}^3$.

21) If one angle in a parallelogram is right, then it is called $\dots\dots\dots$

22) The range of the set of values 4, 7, 3 and 9 is $\dots\dots\dots$

3 Answer the following questions:

23) A sum of money equals 360 pounds was distributed between Hany and Ahmed
in the ratio 7 : 5, **find** the share of each of Hany and Ahmed.

$\dots\dots\dots$

24) Ahmed draw a picture of his brother Osama with a drawing scale 1 : 40.

If the real height of Osama is 160 cm, **what is his height in the picture?**

$\dots\dots\dots$

25) A tank in the shape of a cuboid of dimensions 7 m, 5 m and 9 m.

What is the volume of water in the tank?

$\dots\dots\dots$

26) The following table shows the marks of 50 students in one month in maths:

Marks	0 –	5 –	10 –	15 –	20 –	Total
Number of students	4	8	20	12	6	50

Draw the frequency curve.

2 Giza - El-Haram Educational Zone - Al-Jazeera Language School

1 Choose the correct answer:

- 1) 4.63 litres = cm^3 .
(463 or 4630 or 46300 or 46.3)
- 2) If $a : b = 1 : 3$ and $b : c = 3 : 2$, then $a : c =$
(1 : 3 or 1 : 2 or 3 : 1 or 2 : 3)
- 3) If the numbers 2, 3, 10 and x are in proportion, then $x =$
(10 or 13 or 14 or 15)
- 4) The ratio between 18 hours to one day and a half = :
(4 : 3 or 3 : 4 or 1 : 3 or 1 : 2)
- 5) If the length of edge of a cube = 5 cm, then its volume = cm^3 .
(125 or 25 or 5 or 0.5)
- 6) If $\frac{x}{18} = 10\%$, then $x =$
($\frac{5}{6}$ or $\frac{9}{5}$ or $\frac{18}{5}$ or $\frac{9}{50}$)
- 7) If the volume of a cuboid equals 560 cm^3 and its base length = 8 cm and its width = 5 cm, then its height = cm.
(50 or 14 or 80 or 20)
- 8) The ratio between the perimeter of a square and its side length =
(1 : 3 or 4 : 3 or 4 : 1 or 1 : 4)
- 9) If $(45\% \text{ of } x) = 90$, then $x =$
(20 or 100 or 200 or 300)
- 10) The diagonals are not equal in length and perpendicular in the
(parallelogram or rectangle or rhombus or square)
- 11) The range of the marks 40, 20, 50, 80 and 70 is
(35 or 40 or 80 or 60)
- 12) A factory produces 4000 cans of juice during 8 hours,
then the rate of production =
(320 or 400 or 500 or 230)
- 13) The following data are descriptive except
(favourite colour or age or birthplace)

2 Complete the following:

- 14) $1500 \text{ cm}^3 =$ dm^3 .
- 15) Ali bought 5 kg of orange for 15 pounds, then the price of 8 kg of the same orange =
- 16) The two diagonals in a parallelogram are
- 17) $1 - 35\% =$ %.
- 18) $\frac{1}{5} : \frac{1}{3} : \frac{1}{2} =$: :
- 19) If 3, 4, x and 20 are proportional, then $x + 5 =$

20) Drawing scale = $\frac{\dots\dots\dots}{\dots\dots\dots}$

21) The two diagonals are equal in length in $\dots\dots\dots$ and $\dots\dots\dots$

22) $1.2 \text{ m} : 240 \text{ cm} = \dots\dots\dots : \dots\dots\dots$

3 Answer the following questions:

23) The distance between Cairo and Ismailia on a map is 7 cm with a drawing scale $1 : 2000000$, find the real distance between them in km.

$\dots\dots\dots$

24) Three persons set up a company. The 1st paid 35000 pounds, the 2nd paid 25000 pounds and the 3rd paid 20000 pounds. At the end of the year, the profit was 16000 pounds. What is the profit of each one of them?

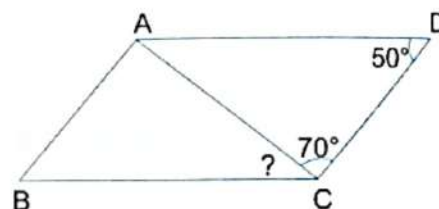
$\dots\dots\dots$

25) In the opposite figure:

ABCD is a parallelogram in which
 $m(\angle D) = 50^\circ$ and $m(\angle ACD) = 70^\circ$.

Find: a) $m(\angle B) = \dots\dots\dots$

b) $m(\angle ACB) = \dots\dots\dots$



26) The following table shows the extra money which 105 workers got in a month.

Extra money	20 –	30 –	40 –	50 –	60 –	70 –	Total
Number of workers	20	15	30	25	10	5	105

a) What is the number of workers who got less than 50 pounds?

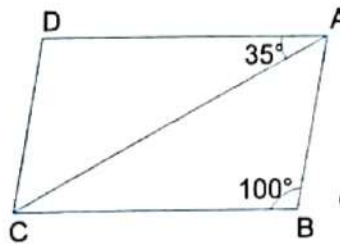
b) Draw the frequency curve for the distribution.

3

Alexandria - West Alexandria Educational Directorate

1 Choose the correct answer:

- 1) The percentage is a ratio its second term is (1 or 10 or 100 or 1000)
- 2) If the numbers : 4 , x , 12 and 18 are proportional, then the value of x = (4 or 6 or 8 or 12)
- 3) If one angle of a parallelogram is right, then it is called a (rectangle or square or rhombus or cube)
- 4) The range of the set of values 7 , 3 , 6 , 9 and 5 is (2 or 4 or 6 or 12)
- 5) $1\frac{3}{4}$ =% . (25 or 50 or 75 or 175)
- 6) In the proportion: the product of extremes the product of means. (> or < or ≠ or =)
- 7) $5\frac{9}{4} : 14.5 = \dots : \dots$ (in the simplest form) (1 : 2 or 2 : 1 or 4 : 1 or 1 : 4)
- 8) The following data are descriptive data except the (favourite colour or age or birthplace or blood species)
- 9) If $\frac{2}{5} = \frac{x}{15}$, then x = (2 or 5 or 6 or 15)
- 10) The capacity of the vessel in the shape of a cube with edge length 15 cm, filled with honey = cm^3 . (3.375 or 33.75 or 337.5 or 3375)
- 11) The ratio between 16 kirats : 1 feddan = : (1 : 2 or 2 : 1 or 2 : 3 or 3 : 2)
- 12) $56000 \text{ cm}^3 = \dots \text{ dm}^3$. (5.6 or 56 or 560 or 5600)
- 13) In the opposite figure:
ABCD is a parallelogram,
 $m(\angle ACD) = \dots$



(45° or 35° or 180° or 100°)

2 Complete the following:

- 14) The ratio between the length of the side of an equilateral triangle and its perimeter is :
- 15) 250 grams : $\frac{1}{2}$ kg = :
- 16) If Hassan spends L.E. 45 within three days, then the rate of what Hassan spends per day = L.E. per day.
- 17) The volume of a cuboid is 64 cm^3 and the area of its base is 16 cm^2 , then its height = cm.

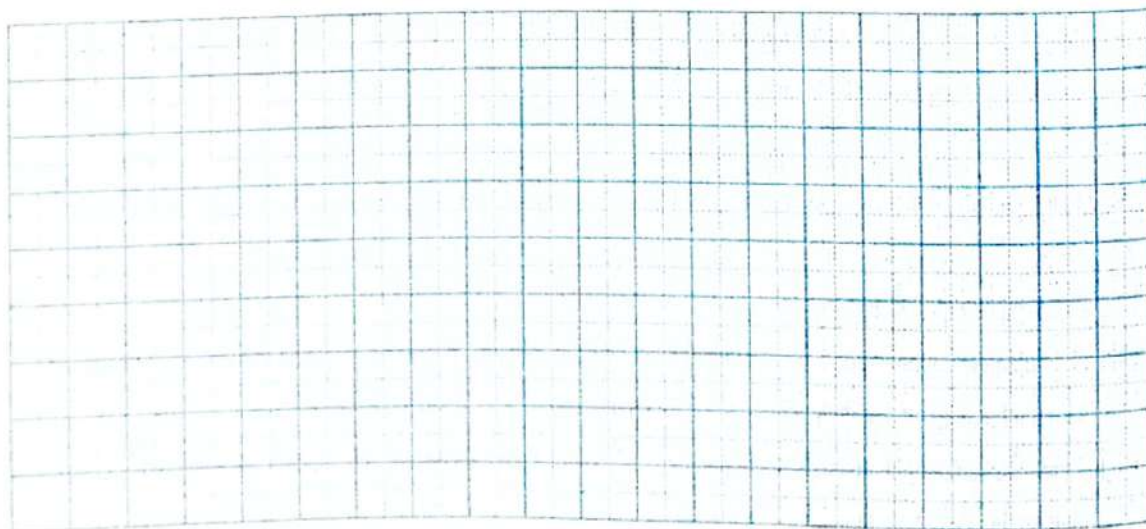
- 18) A wooden box in the form of a cube, its external volume is 1000 cm^3 its capacity is 729 cm^3 , then the volume of the wood of the box = cm^3 .
- 19) The real length of an insect is 0.3 mm and its length in a picture is 4.5 cm, then the drawing scale = :
- 20) The data: age, height, weight and favourite food are quantitative data except
- 21) If the sum of lengths of all edges of a cube is 132 cm, then its volume = cm^3 .
- 22) If $A : B = 2 : 3$, $B : C = 3 : 5$, then $A : C = \dots\dots\dots : \dots\dots\dots$

3 Answer the following questions:

- 23) If the ratio among the measures of the angles of a triangle is $2 : 3 : 4$, **find** the measure of each angle in this triangle.
- 24) Khaled bought a flat for L.E. 150000, he sold it at a 5% loss. **Calculate** the selling price of the flat.
- 25) A container has 12 litres of oil, if we want to put this oil in small bottles the capacity of each of them is 400 cm^3 .
Calculate the number of bottles which are needed.
- 26) The following table shows the marks of 100 students in one month in maths:

Marks	20 –	30 –	40 –	50 –	Total
Number of students	15	30	40	15	100

Draw the frequency curve of this distribution.



4

Menofia - Tala Educational Directorate

1 Complete the following:

- 1) $\frac{1}{8} = \dots\dots\dots\%$.
- 2) The ratio between the length of the side of the equilateral triangle and its perimeter = $\dots\dots\dots$; $\dots\dots\dots$
- 3) Age is $\dots\dots\dots$ data.
- 4) $4.5 \text{ cm} : 0.5 \text{ mm} = \dots\dots\dots$; $\dots\dots\dots$
- 5) If an agricultural tractor ploughs 24 feddans in 4 hours, then the rate of its performance = $\dots\dots\dots$
- 6) The two diagonals are perpendicular in $\dots\dots\dots$ and $\dots\dots\dots$
- 7) $65 \text{ dm}^3 = \dots\dots\dots$ litre.
- 8) If the ratio between two consecutive angles in a parallelogram is $2 : 1$, then the measures of these angles are $\dots\dots\dots$ and $\dots\dots\dots$
- 9) If $\frac{3}{4} = \frac{2x}{8}$, then $x = \dots\dots\dots$

2 Choose the correct answer:

- 10) The ratio between 350 P.T. : 5 pounds = $\dots\dots\dots$: $\dots\dots\dots$
(2 : 5 or 2 : 1 or 7 : 10 or 5 : 1)
- 11) The volume of a cube, the sum of its edge lengths is $36 \text{ cm} = \dots\dots\dots \text{ cm}^3$.
(18 or 9 or 6 or 27)
- 12) $25\% \div \frac{1}{4} = \dots\dots\dots\%$.
(1 or 10 or 100 or 1000)
- 13) The range of the set of values 15, 12, 7 and 18 is $\dots\dots\dots$ (20 or 19 or 11 or 22)
- 14) The ratio between $\frac{2}{3} : \frac{2}{5} = \dots\dots\dots$: $\dots\dots\dots$ (3 : 2 or 3 : 5 or 5 : 3 or 2 : 3)
- 15) A cuboid of volume 120 cm^3 and height 6 cm, then the area of its base = $\dots\dots\dots$
(72 cm or 70 cm or 20 cm or 20 cm^2)
- 16) $15\% + 35\% + \dots\dots\dots = 1$ (0.25 or 0.5 or 0.75 or 0.35)
- 17) If $a : b = 2 : 3$, $b : c = 3 : 4$, then $a : c = \dots\dots\dots$: $\dots\dots\dots$ (3 : 1 or 3 : 2 or 1 : 2 or 2 : 1)
- 18) If one of the angles of the parallelogram is right and two of its adjacent sides are equal in length, then it is called a $\dots\dots\dots$
(rhombus or rectangle or triangle or square)
- 19) If the ratio $6 : 7 = x : 49$, then $x = \dots\dots\dots$ (42 or 48 or 54 or 63)
- 20) 20% of $\dots\dots\dots = 200$ (8000 or 1000 or 2000 or 1500)

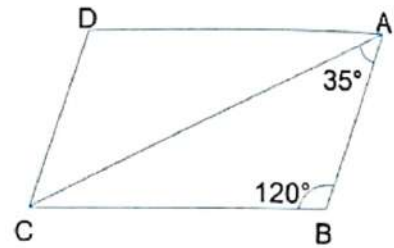
- 21) If the length in drawing is 5 cm and the length in reality 10 km, then the drawing scale = (1 : 50000 or 1 : 100000 or 1 : 200000 or 1 : 300000)
- 22) 1, 4, 9 and (in the same pattern) (13 or 15 or 18 or 16)

3 Answer the following questions:

- 23) An auto fair owner bought a car for L.E. 45000, then he spent L.E. 5000 for repairing it and he sold it for L.E. 55000. Find the percentage of profit.
- 24) A cube-shaped piece of metal, with edge length 12 cm was melted and reshaped into small cubes with edge length 3 cm, find the number of the cubes which can be obtained.

25) In the opposite figure:

ABCD is a parallelogram,
 $m(\angle B) = 120^\circ$ and $m(\angle BAC) = 35^\circ$,
 without using geometrical instruments find:

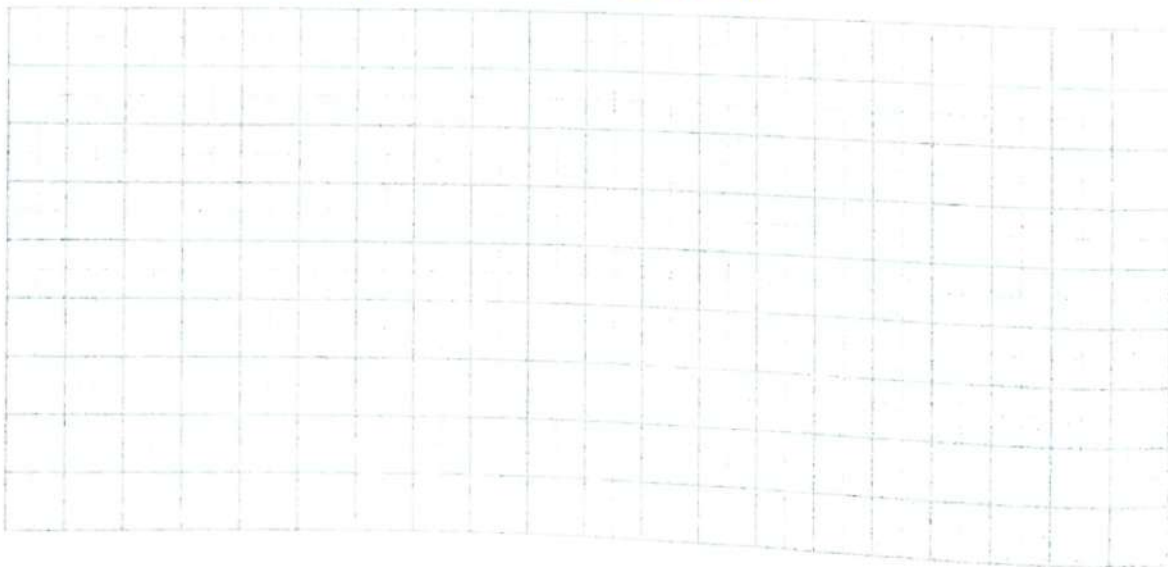


- a) $m(\angle D) = \dots\dots\dots$ b) $m(\angle DAC) = \dots\dots\dots$

- 26) The following table shows the marks of 70 students in one month:

Marks	10 –	20 –	30 –	40 –	Total
Number of students	15	25	20	10	70

Draw the frequency curve of the distribution.



5

Gharbia - Gharbia Educational Directorate

1 Choose the correct answer:

- 1) $\frac{1}{2}$ an hour : 36 minutes = : (3 : 6 or 2 : 3 or 5 : 6 or 1 : 2)
- 2) The parallelogram in which the diagonals are perpendicular and not equal in length is called a (rectangle or rhombus or trapezium or square)
- 3) Hassan spends L.E. 75 within three days, then the rate of what Hassan spends = L.E./day. (25 or 30 or 45 or 135)
- 4) $4 \text{ m}^3 = \dots\dots\dots \text{ dm}^3$. (40 or 400 or 4000 or 40000)
- 5) If the length of Suez Canal in a map of drawing scale 1 : 10000 is 15 cm, then its real length in km = (1.5 or 165 or 170 or 185)
- 6) The range of values: 7 , 3 , 6 , and 9 is (3 or 4 or 12 or 6)
- 7) If the ratio among the measures of angles of a triangle is 2 : 3 : 4, then the measure of the smallest angle =°. (40 or 60 or 80 or 180)
- 8) If the area of one face of a cube = 4 cm^2 , then its volume = cm^3 . (6 or 24 or 8 or 64)
- 9) A merchant sold his goods with profit 15 %, then the percentage of the selling price =%. (15 or 85 or 115 or 150)
- 10) The line segment resulted from the intersection of two faces of a solid shape is called°. (vertex or edge or diagonal or face)
- 11) $0.0375 = \dots\dots\dots\%$. (0.375 or 3.75 or 37.5 or 375)
- 12) If ABCD is a parallelogram, then $m(\angle A) + m(\angle B) = \dots\dots\dots^\circ$. (90 or 180 or 360 or 108)
- 13) If $\frac{x+12}{6} = 4$, then $x = \dots\dots\dots$ (4 or 6 or 24 or 12)

2 Complete the following:

- 14) The side length of a square = 3 cm, then the ratio between its side length and its perimeter =
- 15) If the base of a cuboid is a square, its volume is 2000 cm^3 , its height is 5 cm, then the side length of its base = cm.
- 16) If $a : b = 2 : 3$ and $b : c = 4 : 5$, then $a : c = \dots\dots\dots$:
- 17) Age is data.

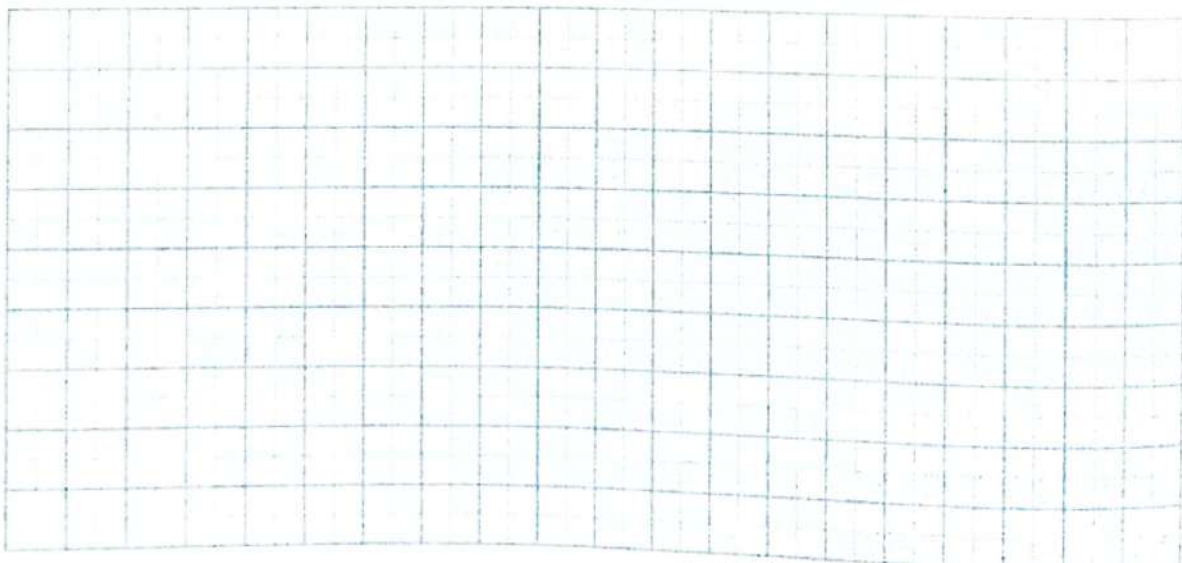
- 18) The circumference of the circle : the length of its diameter = :
- 19) The rhombus whose one of its angles is right is called a
- 20) Write the third proportional of the numbers: 0.8 , 4.8 , and 12
- 21) $1.5 \text{ litres} + 0.5 \text{ dm}^3 + 500 \text{ cm}^3 = \dots\dots\dots \text{ litres.}$
- 22) 15% of = 75

3 Answer the following questions:

- 23) A piece of land is distributed between two brothers in the ratio 7 : 5, if the share of the first one exceeds the share of the second by 80 square metres. **Find** the area of the land and the share of each of the first and the second.
-
- 24) If the sum of lengths of all edges of a cube equals 132 cm, **calculate** its volume.
-
- 25) Khaled bought a flat for L.E. 150000. After selling it, he found that the percentage of his loss was 15%. **Calculate** the selling price of the flat.
-
- 26) The following table shows the numbers of hours which are spent by 46 pupils to study their lessons daily.

Number of hours	1 –	2 –	3 –	4 –	5 –	6 –	Total
Number of pupils	8	11	15	6	4	2	46

Represent these data by the frequency curve.



6

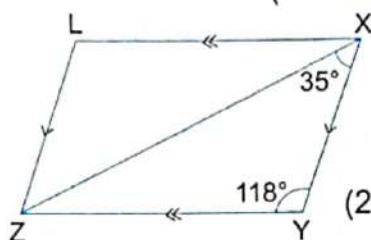
Kafr El-Sheikh - Kafr El-Sheikh Educational Directorate

1 Choose the correct answer:

- 1) The range of the set of values 29 , 33 , 57 , 36 and 49 is
(32 or 33 or 28 or 86)
- 2) $15 : 105 = \dots\dots\dots$
(1 : 7 or 10 : 7 or 3 : 22 or 5 : 36)
- 3) $56\,000\text{ cm}^3 = \dots\dots\dots\text{ dm}^3$.
(5.6 or 560 or 0.56 or 56)
- 4) If a factory produces 5000 juice cans in 8 hours, then its production rate per hour
= cans/hour.
(62.5 or 625 or 6.25 or 6250)

5) In the opposite figure:

If XYZL is a parallelogram,
then $m(\angle LXZ) = \dots\dots\dots^\circ$.



- (27 or 35 or 118 or 180)
- 6) If the percentage of the number of girls in a class is 67%, then the percentage of
the number of boys in this class =%.
(43 or 100 or 33 or 167)
- 7) If $\frac{2}{6} = \frac{10}{x}$, then $x = \dots\dots\dots$
(12 or 120 or 3 or 30)
- 8) If the drawing scale is < 1 , then it expresses
(enlargement or minimization or congruency or otherwise)
- 9) A vessel is in the shape of a cube with edge length 15 cm, its capacity =
litres.
(3.375 or 3375 or 33.75 or 337.5)
- 10) The following data are all quantitative except
(age or height or weight or favourite food)
- 11) $40\% = \dots\dots\dots$ (as a common fraction)
($\frac{4}{100}$ or $\frac{2}{50}$ or $\frac{2}{5}$ or $\frac{5}{20}$)
- 12) If $A : B = 2 : 3$ and $B : C = 3 : 5$, then $A : C = \dots\dots\dots$
(2 : 5 or 5 : 2 or 3 : 5 or 5 : 3)
- 13) The volume of a cuboid of dimensions 70, 50, and 30 cm the volume of
a cuboid of base area 2925 cm^2 and height 35 cm.
($<$ or $>$ or $=$ or \geq)

2 Complete the following:

- 14) The four angles are right angles in each of the and
- 15) If the ratio between the number of uneducated people to those who are
educated is in a village is 4 : 25 , then the ratio =%.
- 16) $55\text{ mL} = \dots\dots\dots\text{ cm}^3$.
- 17) 16 kirats : 1 feddan = : (in the simplest form)

- 18) If Ali bought 5 kg of orange for L.E. 15, then the amount he must pay to buy 8 kg = L.E.
- 19) The ratio between the perimeter of the square to its side length is :
- 20) If the sum of lengths of all edges of a cube is 132 cm, then its volume = cm^3 .
- 21) If the distance between two cities on a map is 3 cm and the real distance between them is 9 km, then the drawing scale =
- 22) The opposite table shows the marks of 50 students in one test, then the number of students whose marks are 30 or more =

Sets	10 –	20 –	30 –	40 –
Number of students	6	10	20	14

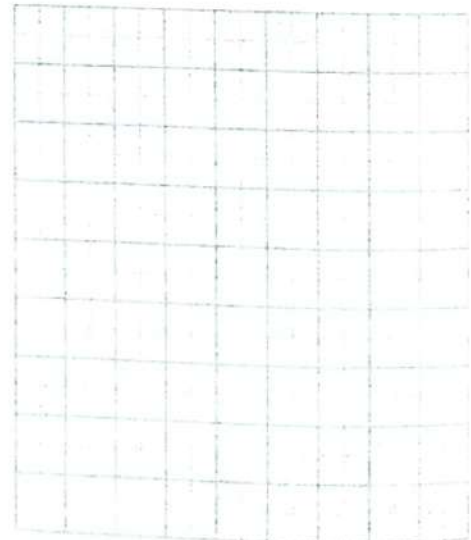
3 Answer the following questions:

- 23) Heba bought an electric washing machine for L.E. 3600. If the discount was 10%, **calculate** the original price of it before the discount.
- 24) If the ratio between the lengths of the sides of a triangle is 2 : 3 : 4 and the perimeter of the triangle is 54 cm, **find** the length of the longest side.
- 25) A cube-shaped tin of internal edge length 36 cm is filled with maize oil. It is wanted to put the oil in small tins in the shape of cubes of internal edge length 9 cm. **Find** the number of small tins needed to do that.

- 26) The following table shows the marks of 100 pupils in maths test:

Marks	20 –	30 –	40 –	50 –	60 –
Number of pupils	20	15	30	25	10

Draw the frequency curve for this distribution.



7

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1 Choose the correct answer:

1) If $A : B = 2 : 5$, then $\frac{A}{A+B} = \dots\dots\dots$: $\dots\dots\dots$ (1 : 2 or 2 : 7 or 3 : 5 or 2 : 9)2) $\frac{3}{7} \times \frac{7}{3} = \dots\dots\dots\%$. (50 or 70 or 80 or 100)3) The range of the set of values 7, 3, 6, 9 and 5 is $\dots\dots\dots$ (9 or 7 or 6 or 3)4) If $\frac{8}{x} = 0.5$, then $x = \dots\dots\dots$ (4 or 8 or 16 or 40)5) A factory produces 4000 cans of juice during 8 hours,
then the rate of production = $\dots\dots\dots$ cans/hour. (100 or 200 or 300 or 500)6) If ABCD is a parallelogram in which $\overline{AB} \perp \overline{BC}$, then it is called a $\dots\dots\dots$
(square or rhombus or trapezium or rectangle)7) $2 \text{ m}^3 = \dots\dots\dots \text{ dm}^3$. (2 or 20 or 200 or 2000)8) If the ratio among the measures of the angles of a triangle is 1 : 2 : 3, then
the measure of the smallest angle = $\dots\dots\dots$ (10° or 30° or 45° or 60°)

9) In the opposite figure:

The number of trapezoids = $\dots\dots\dots$ 

(2 or 3 or 4 or 5)

10) If the height of a building is 20 m and the ratio of magnification = 1 : 100,
then its height on the picture = $\dots\dots\dots$ cm. (10 or 15 or 20 or 25)11) The following data are descriptive except $\dots\dots\dots$
(favourite food or marital status or weight or birthplace)12) If a merchant bought a TV set for L.E. 1000, sold it for L.E. 1200, then the
percentage of profit = $\dots\dots\dots\%$. (15 or 20 or 30 or 45)13) If the perimeter of the base of a cube = 36 cm, then its volume = $\dots\dots\dots \text{ cm}^3$.
(6 or 36 or 216 or 729)

2 Complete the following:

14) 8 hours : $\frac{1}{2}$ day = $\dots\dots\dots$: $\dots\dots\dots$ 15) The circumference of a circle = $2 R \times \dots\dots\dots$ 16)  (in the same pattern)17) $75\% \text{ litre} + 25\% \text{ dm}^3 = \dots\dots\dots \text{ dm}^3$.

- 18) The two diagonals are perpendicular and equal in length in the
- 19) If x , 5, 4 and 10 are proportional numbers, then the value of x is
- 20) The length of set = ÷ the number of sets.
- 21) If the sum of two numbers = 180 and the ratio between them is 2 : 7, then the smallest number =
- 22) The volume of a cuboid whose dimensions are 5 cm, 3 cm and 2 cm = cm^3 .

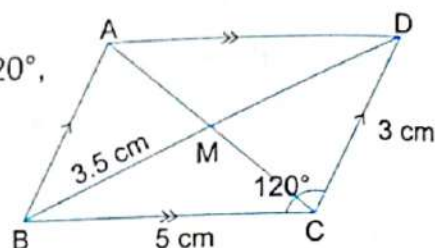
3 Answer the following questions:

23) In the opposite figure:

ABCD is a parallelogram in which $m(\angle BCD) = 120^\circ$,
 $CD = 3 \text{ cm}$, $BC = 5 \text{ cm}$ and $BM = 3.5 \text{ cm}$,

Find:

- a) $m(\angle BAD) = \dots\dots\dots$
- b) The perimeter of the triangle DAB =
- 24) A car covers 300 km in 4 hours and another car covers 65 km in 50 minutes, which of the two cars is faster?
-



25) Nahed bought a computer for L.E. 4500 and the discount was 10%.

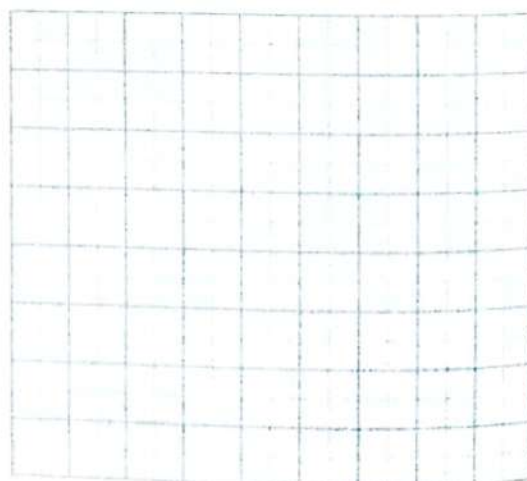
Calculate the original price of the computer before discount.

.....

26) The following table shows the marks of 50 students in English test.

Marks	0 –	5 –	10 –	15 –	20 –	Total
Number of students	4	8	18	12	6	50

- a) Draw the frequency curve.
- b) How many students who got less than 10 marks?



1 Choose the correct answer:

- 1) If 2, 3, x and 15 are proportional, then $x =$ (2 or 5 or 6 or 10)
- 2) The percentage is a ratio, its second term is (10 or 100 or 1000 or 10000)
- 3) 3 litres = cm^3 . (3 or 30 or 300 or 3000)
- 4) If the ratio between a child's age to his brother's age is 2 : 3 and the child's age is 6 years, then his brother's age = years. (9 or 15 or 39 or 41)
- 5) The ratio between the two numbers 1.5 and 4 = : (in the simplest form)
(1 : 4 or 8 : 9 or 3 : 8 or 1 : 6)
- 6) The number of edges of a cube the number of faces of a cuboid.
($>$ or $<$ or $=$ or \leq)
- 7) A merchant bought a TV set for L.E. 1800 and he sold it for L.E. 3600, then his profit = L.E. (1800 or 800 or 200 or 3800)
- 8) The range of the set of values 7, 3, 6, 1 and 5 is (4 or 2 or 6 or 12)
- 9) If the real length is 9 m and the drawing length is 9 cm, then drawing scale = (1 : 10 or 1 : 100 or 1 : 1000 or 1 : 9)
- 10) The antecedent of the ratio 2 : 11 is (3 or 5 or 11 or 2)
- 11) An agricultural tractor ploughs 16 feddans in 4 hours, then its rate of performance = feddans/hour. (4 or 6 or 7 or 8)
- 12) If one of the angles of a parallelogram is right angle, then it is called a
(square or rectangle or rhombus or triangle)
- 13) The descriptive data from the following is
(volume or area or favourite colour or length)

2 Complete the following:

- 14) $\frac{1}{4} =$ %.
- 15) The ratio between the side length of the square and its perimeter = :
- 16) If the volume of a cuboid is 80 cm^3 and the area of its base is 16 cm^2 , then its height = cm.
- 17) 250 grams : $\frac{1}{4}$ kilogram = : (in the simplest form)
- 18) If the drawing scale is > 1 , then this expresses

- 19) If $a : b = 2 : 5$, $b : c = 5 : 7$, then $a : c = \dots : \dots$
- 20) $5 \text{ m}^3 = \dots \text{ dm}^3$.
- 21) The kinds of data are descriptive and \dots data.
- 22) The sum of edge lengths of a cube is 72 cm, then its volume = $\dots \text{ cm}^3$.

3 Answer the following questions:

- 23) Hoda bought an automatic washing machine for L.E. 5400 and the discount was 10%.

Calculate the original price of the washing machine before discount.

- 24) The ratio among the measures of the angles of a triangle is 1 : 3 : 5.

Find the measure of each angle in the triangle.

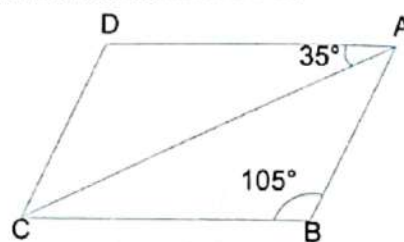
- 25) In the opposite figure:

ABCD is a parallelogram in which
 $m(\angle DAC) = 35^\circ$, $m(\angle B) = 105^\circ$.

Find:

a) $m(\angle BAC) = \dots$

b) $m(\angle D) = \dots$



- 26) The following table shows the marks of 100 students in one maths test:

Marks	10 –	20 –	30 –	40 –	Total
Number of students	15	30	40	15	100

Draw the frequency curve for this distribution in the lattice.



Final Revision

1 Choose the correct answer:

- 1) 16 kirats : 1 feddan = :
(1 : 6 or 3 : 2 or 1 : 3 or 2 : 3)
- 2) If $\frac{7}{2} = \frac{21}{x}$, then $x + 2 =$
(8 or 21 or 12 or 7)
- 3) The following data are descriptive except
(favourite colour or address or age or blood species)
- 4) 4 200 000 cm³ = m³.
(42 or 420 or 4.2 or 4 200)
- 5) A cube, the perimeter of its base is 36 cm, then its volume = cm³.
(36 or 729 or 378 or 216)
- 6) 5 mL = cm³.
(0.5 or 0.05 or 0.005 or 5)
- 7) $\frac{9}{20} =$ %.
(40 or 45 or 60 or 90)
- 8) The volume of the cuboid whose dimensions are 20 cm, 30 cm and 50 cm = dm³.
(1000000 or 25000 or 30 or 500000)
- 9) 500 gm : 1 $\frac{1}{2}$ kg =
(1 : 2 or 1 : 3 or 2 : 3 or 1 : 5)
- 10) 4.6 litres = mL.
(46 or 460 or 4 600 or 46 000)
- 11) If the length of a rectangle whose area equals 24 cm² is 6 cm, then the ratio between its perimeter to its length equals
(4 : 1 or 10 : 3 or 12 : 5 or 3 : 2)
- 12) If the drawing scale is 1 : 2 000 and the real length is 20 m, then the drawing length is cm.
(1 or 2 or 3 or 4)
- 13) If $\frac{x}{18} = 10\%$, then $x =$
($\frac{6}{5}$ or $\frac{9}{5}$ or $\frac{18}{5}$ or $\frac{9}{50}$)
- 14) The antecedent of the ratio $\frac{3}{7}$ is
(3 or 7 or 10 or otherwise)
- 15) If $a : b = 3 : 5$ and $b : c = \frac{2}{5}$, then $a : c =$:
(6 : 25 or 6 : 10 or 10 : 25)

2 Complete the following:

- 1) The equality of two ratios or more is called
- 2) The ratio between the length of drawing and the length in reality is called

- 3) A rate is
- 4) If the drawing scale is > 1 , this expresses
- 5) If the drawing scale is < 1 , this expresses
- 6) Length in drawing = drawing scale \times
- 7) If the length in drawing is 3 cm and the length in real life is 6 km, then the drawing scale is :
- 8) The ratio whose second term is 100 is called
- 9) The numbers 6, x , 10 and 3 are proportional, then $x =$
- 10) $\frac{1}{4} : \frac{1}{3} : \frac{1}{2} =$: : 6
- 11) The parallelogram in which one angle is right is called a
- 12) The parallelogram whose two adjacent sides are equal in length and its diagonals are perpendicular is called a
- 13) The diagonals bisect each other and are equal in length in each of and
- 14) A factory produces 45000 cans for juice during 9 hours, then the rate of the production is
- 15) If the volume of a cuboid equals 200 cm^3 , its base length is 5 cm and its width is 4 cm, then its height = cm.
- 16) If $\frac{x+12}{8} = 4$, then $x =$
- 17) If the cost price of a fridge is L.E. 2400 and its selling price equals 2688 pounds, then the percentage of the profit =%.
- 18) $\frac{3}{5} =$ %.
- 19) $12.5\% = \frac{\dots}{8}$
- 20) If the marks of 6 pupils in one of the tests are 36, 40, 60, 33, 25 and 49, then the range for these marks =



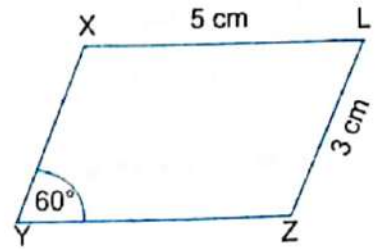
3 a) In the opposite figure:

XYZL is a parallelogram in which

$XL = 5 \text{ cm}$, $LZ = 3 \text{ cm}$ and $m(\angle Y) = 60^\circ$

Find: (1) $m(\angle X)$. (2) $m(\angle L)$.

(3) The perimeter of $\square XYZL$.

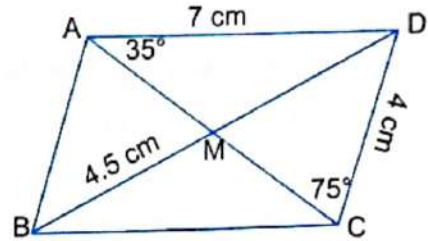


b) In the opposite figure:

ABCD is \square in which $m(\angle CAD) = 35^\circ$,

$m(\angle ACD) = 75^\circ$ and $BM = 4.5 \text{ cm}$.

Find: (1) $m(\angle ADC)$. (2) $m(\angle ABC)$.
(3) $m(\angle CAB)$. (4) The perimeter of $\triangle ABD$.



- 4 A map was drawn with a scale 1 : 500000. If the distance between two cities on the map was 14 cm, **find the real distance between these two cities in km**.
- 5 Three persons started a business, the first paid 30000 pounds, the second paid 50000 pounds, and the third paid 60000 pounds, at the end of the year, the net profit was 56000 pounds. **Calculate the share of each of them**.
- 6 Ahmed drew a picture of his brother Osama with a drawing scale 1 : 40. If the real height of Osama is 160 cm. **What is the height in the picture?**
- 7 The ratio between the length of a rectangle to its width is 7 : 5. If the perimeter of the rectangle is 48 cm, **find:**
a) The length of the rectangle. b) The ratio between length and perimeter.
c) The area of the rectangle.
- 8 A photo was taken for an insect by an enlargement ratio 100 : 1.
If the real length of the insect is 0.8 mm, **find the length of the insect in the picture**.
- 9 A cuboid tin with inner dimensions 2 dm, 3 dm and 4 dm was full of honey.
Calculate the price of honey, given that the price of one litre is L.E. 20.



- 10 A cuboid basin has internal dimensions of 12 dm, 0.8 m and 1.5 m, if 24 litres of water are poured into it every minute. **Find the time needed for the basin to be filled.**
-
- 11 A shopkeeper sold a refrigerator for L.E. 2900, if the percentage of his profit is 16%. **Find the buying price.**
-
- 12 **Distribute** L.E. 300 among three persons by the ratio 1 : 2 : 3.
-
- 13 The ratio among three lengths of the sides of a triangle is 2 : 3 : 4, if the perimeter of the triangle is 54 cm, **find the length of each side of the triangle.**
-
- 14 Two machines are used for manufacturing cloth, the first one produces 1500 m of cloth in 2 hours, the second one produces 1800 m of cloth in two hours and a half, **which of the two machines is more efficient?**
-
- 15 Heba bought a vacuum cleaner for 640 pounds with a discount 20%. **Calculate the price before discount.**
-
- 16 A container has 12 litres of honey. We want to put them in smaller vessels, the capacity of each of them is 400 cm^3 , **calculate the number of needed vessels.**
-
- 17 If a swimming pool is in the shape of a cuboid whose internal dimensions are 40 m, 30 m and 1.8 m, **find its capacity in litres.**
-
- 18 An aquarium for fish is in the shape of a cube with a lid its internal edge length is 3.5 cm. The aquarium is made of glass. **Find the volume of the glass, given that the thickness of the glass is 1 cm.**
-
- 19 8400 cm^3 of water is poured into a vessel in the shape of a cuboid with internal dimensions 20 cm, 35 cm and 45 cm, **find:**
a) The height of water in the vessel.
b) The volume of water needed to be added to the vessel to fill it completely.
-
- 20 Safaa bought an automatic washing machine for L.E. 3600. If the discount was 10%, **calculate the original price of the washing machine before the discount.**



- 21 A piece of land is distributed between two brothers in the ratio 7 : 5, if the share of the first one exceeds the share of the second by 80 m^2 , **find the share of each of the first and the second and the area of the land.**

- 22 **The following table shows the marks of 40 students in an examination.**

Marks	10 –	20 –	30 –	40 –	.....	60 –	Total
Number of students	3	5	8	.....	9	5	40

- Complete the table.
- Represent these data by a frequency curve.
- Find the number of students who got 40 marks or more.
- Find the number of students who got less than 30 marks.

Test 1 on Unit 1

1 Choose the correct answer:

a) The ratio $15 : 45 = \dots\dots\dots$ as a fraction simplest form.

$(\frac{15}{45} \text{ or } \frac{70}{15} \text{ or } \frac{15}{70} \text{ or } \frac{1}{3})$

b) 120 minutes : 1.5 hours = $\dots\dots\dots$: $\dots\dots\dots$ in the simplest form.

$(3 : 4 \text{ or } 80 : 1 \text{ or } 4 : 3 \text{ or } 12 : 15)$

c) If $\frac{x}{8} = \frac{6}{16}$, then $x = \dots\dots\dots$

$(3 \text{ or } 4 \text{ or } 1 \text{ or } 2)$

d) If $A : B = 3 : 5$, $B : C = 5 : 7$, then $A : C = \dots\dots\dots$: $\dots\dots\dots$.

$(3 : 7 \text{ or } 3 : 10 \text{ or } 5 : 3 \text{ or } 5 : 4)$

e) The ratio between the radius of a circle and its circumference is $\dots\dots\dots$.

$(2\pi : 1 \text{ or } \pi : 1 \text{ or } 1 : 2\pi \text{ or } 1 : 4)$

2 Complete the following:

a) The ratio between a child's age and his father is $4 : 17$, if the child is 8 years, then his father is $\dots\dots\dots$ years.

b) $1 \frac{1}{2} \text{ m}^2 : 1500 \text{ cm}^2 = \dots\dots\dots$: $\dots\dots\dots$ (in the simplest form).

c) $7 : 9 = 14 : \dots\dots\dots$

d) In the ratio $\frac{2}{7}$, the antecedent is $\dots\dots\dots$, and the consequent is $\dots\dots\dots$.

e) If $a : b : c = 4 : 5 : 11$ and $b - a = 7$, then the value of $c = \dots\dots\dots$.

3 A car consumes 30 liters of benzene to cover 210 km. How many liters of benzene does the car consume to cover 420 km?

4 The area of a rectangle equals 96 cm^2 . If its width equals 8 cm, calculate the ratio between the length of the rectangle and its perimeter.

5 If the ratio between the height of a building and a tree is $8:3$ and the height of the tree is 12 m. Find the height of the building.

Test 2 on Unit 1

1 Choose the correct answer:

- a) $\frac{1}{3} : \frac{1}{4}$ (3 : 4 or 4 : 3 or 3 : 12 or 1 : 1)
- b) The perimeter of a square: its side length = : (1 : 4 or 1 : 1 or 4 : 1 or 1 : 3)
- c) If 200 grams of chocolate give 600 calories, what is the number of calories found in 60 grams of the same chocolate? (180 or 200 or 36000 or 30)
- d) If $\frac{4}{8} = \frac{12}{x}$, then $x =$ (8 or 16 or 32 or 24)
- e) The ratio between 2 feddans : 64 kirats equals (2 : 64 or 3 : 4 or 4 : 3 or 32 : 1)

2 Complete the following:

- a) $2\frac{1}{2}$ m : 150 cm = :
- b) An irrigation machine irrigates 49 feddans in 7 hours, then the rate of work for this machine is feddans/ hour.
- c) If the difference between two numbers is 18 and the ratio between them is $\frac{5}{14}$, then the greatest number =
- d) If Hany drinks 14 glasses of milk weekly, then the rate of what he drinks daily is glasses.
- e) The ratio 6 : 11 is the same as $x : 33$, then $x =$

3 The ratio between three angles of a triangle is 1 : 2 : 3. Find the measures of the three angles.

4 The number of students in a class in grade six is 35 students. If the number of boys in the class = $\frac{3}{4}$ number of girls, find the number of the boys and girls.

5 A factory produces 8400 cans in 14 hours. Calculate:

- a) The rate of production per hour.
- b) The number of the produced cans in 18 hours.



Test 1 on Unit 2

1 Choose the correct answer:

- a) $\frac{2}{4} = \frac{\dots}{12}$ (4 or 8 or 6 or 3)
- b) 45% = (as a fraction in the simplest form) ($\frac{45}{100}$ or $\frac{9}{20}$ or $\frac{4}{10}$ or $\frac{5}{100}$)
- c) A picture of a tree is drawn with a drawing scale 2 : 80. If the real length of the tree is 3.2 m, what is its length in the drawing? (8 m or 0.08 m or 25 m or 8 m)
- d) A merchant sold his goods with profit 17 %, then the percentage of the selling price to the buying price = (17 % or 117 % or 83 % or 50 %)
- e) Which of the following ratios is equivalent to $\frac{21}{27}$? ($\frac{7}{54}$ or $\frac{9}{7}$ or $\frac{45}{35}$ or $\frac{35}{45}$)

2 Complete the following:

- a) If the scale of a drawing > 1 , it expresses
- b) If 9 , 12 , x , 72 are proportional numbers, then $x = \dots\dots\dots$
- c) If the ratio between two numbers is 1 : 10 and $\frac{2}{3}$ of their sum is 66 , the two numbers are: ,
- d) If $\frac{2(x-4)}{9} = \frac{36}{54}$, $x = \dots\dots\dots$
- e) If 60% of a number is 138, then the number is

- 3 A magnified picture of an insect was taken with an enlargement ratio 280 : 1, if the insect's length in the picture is 5.6 cm. Find its real length in mm.

- 4 A shop sold TV sets for each L.E 2550 after a 25% discount. What's the original price?

- 5 If the perimeter of an isosceles triangle is 15 cm and the ratio between its sides lengths is 1 : 1 : 3. Find its lengths.



Test 2 on Unit 2

1 Complete the following:

- a) The product of the extremes = the product of
- b) 40% of 80 =
- c) 7, 12,, 36 are proportional.
- d) $1 - (25\% + 19\%) = \dots\dots\dots$
- e) If $\frac{a}{b} = \frac{c}{d}$, then $a \times d = \dots\dots\dots \times \dots\dots\dots$

2 Choose the correct answer:

- a) If $2x = 7y$, then $\frac{x}{y} = \dots\dots\dots$ ($\frac{2}{7}$ or $\frac{2}{14}$ or $\frac{2}{5}$ or $\frac{7}{2}$)
- b) The drawing scale = $\frac{\dots\dots\dots}{\dots\dots\dots}$
 ($\frac{\text{length in reality}}{\text{length in drawing}}$ or $\frac{1}{\text{length in reality}}$ or $\frac{\text{length in drawing}}{\text{length in reality}}$ or $\frac{1}{2}$)
- c) $0.192 = \dots\dots\dots\%$ (1.92 or 19.2 or 192 or 92)
- d) If a man distributed 5400 pounds among his sons in the ratio 2 : 3 : 4, then the share of the second son is pounds (600 or 1800 or 2400 or 1200)
- e) If $a : b = 4 : 9$, then $b : (a + b) = \dots\dots\dots$ (9:4 or 1:13 or 13:9 or 9:13)

- 3 Hani deposited L.E 5000 in a bank, after one year the total amount was L.E 5500.
Find the interest percentage.

- 4 The distance between two cities on a map is 6 cm and the real distance between them is 54 km. If the distance between two other cities on the same map is 9 cm. Determine the real distance between them in km.

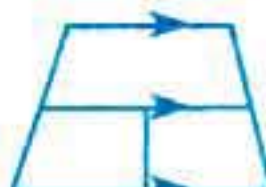
- 5 A tractor ploughs 9 feddans in 3 hours, find the number of feddans that this tractor can plough in 6 hours.

Test 1 on Unit 3

1 Complete the following:

- a) The pattern $\triangle \square \bigcirc \triangle \square \bigcirc \triangle \square \bigcirc$ is a repetition of
- b) If one angle is right in a parallelogram, then it is called a
- c) A rhombus is a square if its are equal in length.
- d) $24 \text{ dm}^3 = \dots\dots\dots$ liters
- e) If the area of one face of a cube is 81 cm^2 , then its volume is cm^3

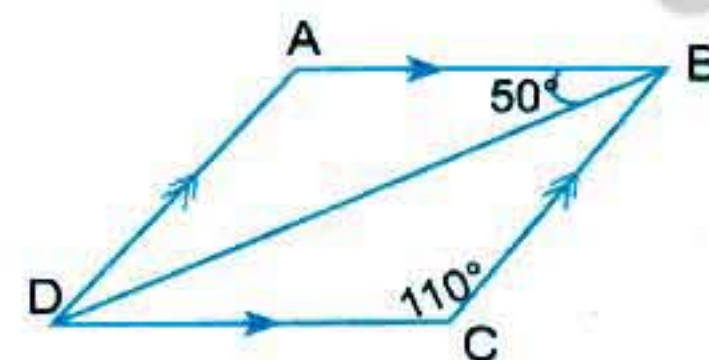
2 Choose the correct answer:

- a) | || ||| (in the same pattern) (| || or |||| |||| or || |||| or ||||)
- b) The number of trapezoids in the opposite figure is  (1 or 2 or 3 or 5)
- c) In the parallelogram, the sum of two consecutive angles = (180 or 90 or 360 or 120)
- d) $\frac{3}{4}$ liters = (750 m^3 or 750 dm^3 or 750 cm^3 or 0.75 mL)
- e) The number of edges of a cuboid is (6 or 8 or 4 or 12)

- 3 The height of a cuboid is 6 cm, if it has a square base and its volume is 726 cm^3 , find the length of its base.

- 4 A cubic water tank with inner edge of 7 m. If water is poured into it at rate of 24500 liters/ hr. Find the height of the water after one and half hour, and find the time needed to fill the tank.

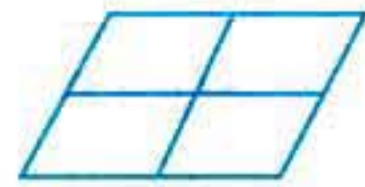
- 5 In the opposite figure: ABCD is a parallelogram in which $m(\angle C) = 110^\circ$, $m(\angle ABD) = 50^\circ$
Find: $m(\angle A)$, $m(\angle ADC)$.



Test 2 on Unit 3

1 Complete the following:

- a) The capacity of a container which is filled with $89000 \text{ mm}^3 = \dots\dots\dots$ liters
- b) In the opposite figure: the number of parallelograms is $\dots\dots\dots$
- c) If the area of one base of a cuboid is 45 cm^2 and its volume is 270 cm^3 , then its height = $\dots\dots\dots$ cm.
- d) The two diagonals are equal and perpendicular in the $\dots\dots\dots$
- e) The following figure in the pattern $\triangle \bigcirc \triangle \bigcirc \bigcirc \triangle \bigcirc \bigcirc \bigcirc \triangle$ is $\dots\dots\dots$

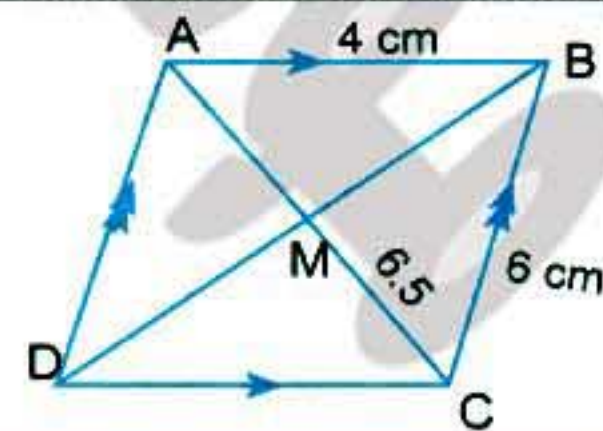


2 Choose the correct answer:

- a) If the perimeter of one face of a cube is 24 cm, then its volume = $\dots\dots\dots \text{ cm}^3$
(36 or 4 or 216 or 144)
- b) The mL is the measuring unit of the $\dots\dots\dots$ (capacity or length or perimeter or area)
- c) If the sum of lengths of all the edges of a cube is 84 cm, then its volume = $\dots\dots\dots \text{ cm}^3$
(7 or 49 or 588 or 343)
- d) If the capacity of a cuboid shaped tank is 45000 liters and its height is 5 m, then the area of its base = $\dots\dots\dots$
(9000 m^2 or 9 cm^2 or 9 m^2 or 0.3 m^2)
- e) The shape whose diagonals are perpendicular but not equal is $\dots\dots\dots$
(rectangle or rhombus or square or parallelogram)

3 Convert the following into liters: 12 m^3 , 3.2 dm^3 , 1205 cm^3 , 847 mL

- 4 In the parallelogram ABCD, $AB = 4 \text{ cm}$,
 $BC = 6 \text{ cm}$ and $MC = 6.5 \text{ cm}$.
Find the perimeter of $\triangle ACD$.



- 5 Which is greater in volume : a cube of edge length 9 cm or a cube whose base perimeter is 48 cm?

Test 1 on Unit 4

1 Choose the correct answer:

- a) The following data are all of the quantitative data except
(age **or** marks of exam **or** blood type **or** telephone number)
- b) If the marks of 4 students in the maths exam are: 40 , 59 , 35 , 41, then the range of these marks=
(24 **or** 12 **or** 40 **or** 59)
- c) If the range of a set is 60 and the smallest value is 60, then the maximum value =
(60 **or** 0 **or** 1 **or** 120)
- d) The following data are descriptive except
(the favorite color **or** the birth date **or** the name **or** the address)

2 Complete each of the following:

- a) The difference between the greatest value and smallest value in a set is called
- b) The length of a set = +
- c) The weight is an example of data
- d) If we divide the data into sets as (7 – , 12 – , 17 – ,), then the length of each set is
- e) The name of a school is an example of data

3 The following table shows the temperature degrees expected for 20 cities in one of the winter days. Draw the frequency curve of the table

Temperature degree	6 –	10 –	14 –	18 –	Total
Number of cities	4	7	6	3	20

4 The range of the exam scores of 150 students is 48. If you want to construct a frequency table of the scores with length of 6 for each group.
How many groups will there be?

5 The following table shows the wages of a factory workers. How many workers take a weekly wage less than L.E 70?

Weekly wage (L.E)	50 –	60 –	70 –	80 –	90 –	100 –	Total number of workers
Number of workers	15	9	4	4	6	7	45



Test 2 on Unit 4

1 Choose the correct answer:

- a) The following data are descriptive except
(number of students or name or address or birth place)
- b) is one of the quantitative data. (Name or Address or Tallness or Gender)
- c) If the value of a frequency distribution lies between (30 , 70) then the range of this distribution = (100 or 40 or 50 or 70)
- d) Which of the following data is not quantitative?
(ID number or date or year of birth or job title)

2 Complete each of the following:

- a) The kinds of statistic data are quantitative data and
- b) The range = × the number of the sets
- c) The range = -
- d) If we divide the data into the sets (7 - , 14 - , 21 - ,) then the length of each set =
- e) The favorite color is data.

3 The following data shows the number of hours which are spent daily by 30 pupils to study their lessons:

Number of hours	2 -	4 -	6 -	8 -	10 -	Total
Number of pupils	6	9	4	7	4	30

Represent these data by frequency curve.

4 Find the range of the set: 12 , 16 , 45 , 23 , 7

5 The following table shows the tallness of 96 students in centimeter:

Tallness in cm	140 -	144 -	148 -	152 -	156 -	Total
No. of students	12	20	35	16	12	95

- a) What is the percentage of students who are shorter than 156 cm?
- b) What is the number of students who are taller than or equal to 144 cm and shorter than 156 cm?

Summary of the important rules

Unit 1

1) Ratio of two numbers = $\frac{\text{the first number}}{\text{the second number}}$

Unit 2

2) Drawing scale = $\frac{\text{length in drawing}}{\text{length in reality}}$

3) The profit = selling price – cost price

4) The percentage of profit = $\frac{\text{profit}}{\text{cost price}} \times 100\%$

5) Loss = cost price – selling price

6) The percentage of loss = $\frac{\text{loss}}{\text{cost price}} \times 100\%$

Unit 3

7) The perimeter of the square = $4 \times \text{side length}$

8) The perimeter of the parallelogram = the sum of lengths of two consecutive sides $\times 2$

9) The area of the parallelogram = base length \times height

10) The area of the square = side length \times itself

The area of the square = $\frac{1}{2} \times \text{diagonal length} \times \text{itself}$

11) The perimeter of the rectangle = (length + width) $\times 2$

12) The area of the rectangle = length \times width

13) The perimeter of the rhombus = $4 \times \text{side length}$

14) The area of the rhombus = side length \times height

The area of the rhombus = $\frac{1}{2} \times 1^{\text{st}} \text{ diagonal length} \times 2^{\text{nd}} \text{ diagonal length}$

15) The area of the triangle = $\frac{1}{2} \times \text{base length} \times \text{height}$

16) The circumference of a circle = $2\pi r$

17) The volume of the cuboid = length \times width \times height

The volume of the cuboid = base area \times height



- 18) The base area of the cuboid = volume ÷ height
- 19) The height of the cuboid = volume ÷ base area
- 20) The volume of the cube = the edge length × itself × itself

Unit 4

- 21) The range of a set of data = maximum value – minimum value
- The range of a set of data = the length of the set × number of sets

22) The length of a set = $\frac{\text{the range}}{\text{the number of the set}}$

23) The number of sets of data = $\frac{\text{the range}}{\text{the length of the set}}$

24) The center of a set of data = $\frac{\text{lower limit} + \text{upper limit}}{2}$




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Pre-exam Final Revision

1 Choose the correct answer from those given:

- 1) The ratio between the two numbers 3 : 9 is
($\frac{1}{6}$ or $\frac{3}{2}$ or $\frac{1}{3}$ or $\frac{2}{3}$)
- 2) If $\frac{7}{2} = \frac{21}{x}$, then $x =$
(6 or 21 or 12 or 7)
- 3) The following data are descriptive except
(the favorite color or address or age or blood species)
- 4) $4\ 200\ 000\text{ cm}^3 =$ m^3 .
(42 or 420 or 4.2 or 4 200)
- 5) A cube, the perimeter of its base is 36 cm, then its volume = cm^3
(36 or 729 or 378 or 216)
- 6) 5 mL = m^3 .
(0.5 or 0.05 or 0.005 or 5)
- 7) $\frac{9}{20} =$ %
(40 or 45 or 60 or 90)
- 8) The volume of the cuboid whose dimensions are 20 cm, 30 cm and 50 cm = dm^3
(10 or 25 or 30 or 50)
- 9) $500\text{ gm} : 1\frac{1}{2}\text{ kg} =$
(1 : 2 or 1 : 3 or 2 : 3 or 1 : 5)
- 10) In the opposite figure: the number of parallelograms
which can be obtained is

(4 or 5 or 7 or 9)
- 11) 4.6 liters = mL.
(46 or 460 or 4 600 or 46 000)
- 12) If the length of a rectangle whose area equals 24 cm^2 is 6 cm, then the ratio between
its perimeter to its length equals
(4 : 1 or 10 : 3 or 12 : 5 or 3 : 2)
- 13) If the drawing scale is 1 : 2 000 and the real length is 20 m, then the drawing length is
..... cm.
(1 or 2 or 3 or 4)

14) If $\frac{x}{18} = 10\%$, then $x = \dots\dots\dots$.

($\frac{6}{5}$ or $\frac{9}{5}$ or $\frac{18}{5}$ or $\frac{9}{50}$)

15) The antecedent of the ratio $\frac{3}{7}$ is $\dots\dots\dots$.

(3 or 7 or 10 or otherwise)

16) If $a : b = 3 : 5$ and $b : c = \frac{2}{5}$, then $a : c = \dots\dots\dots$.


(6 : 25 or 6 : 10 or 10 : 25)

2 Complete the following:

- 1) Comparing between two quantities from the same kind is $\dots\dots\dots$.
- 2) Comparing between two quantities of different kinds is $\dots\dots\dots$.
- 3) The equality of two ratios or more is $\dots\dots\dots$.
- 4) The ratio between the length of drawing and the length in reality is $\dots\dots\dots$.
- 5) Dividing a thing with a given ratio is $\dots\dots\dots$.
- 6) The ratio whose second term is 100 is $\dots\dots\dots$.
- 7) The parallelogram in which one angle is right is called $\dots\dots\dots$.
- 8) The parallelogram whose two adjacent sides are equal in length and its diagonals are perpendicular is called $\dots\dots\dots$.
- 9) The ratio is $\dots\dots\dots$.
- 10) The volume of a cube = $\dots\dots\dots \times \dots\dots\dots \times \dots\dots\dots$.
- 11) The capacity of a vessel is $\dots\dots\dots$.
- 12) The diagonals bisect each other and are equal in length in each of $\dots\dots\dots$ and $\dots\dots\dots$.
- 13) $\frac{1}{4} : \frac{1}{3} : \frac{1}{2} = \dots\dots\dots : \dots\dots\dots : 6$



Final Revision and Exams

- 14) If $a : b = 2 : 1$, $b : c = 3 : 2$, then $a : c = \dots : \dots$
- 15) The rectangle is a parallelogram in which
- 16) If the volume of a cuboid equals 200 cm^3 , its base length is 5 cm and its width is 4 cm, then its height = cm.
- 17) If $\frac{x + 12}{8} = 4$, then $x = \dots$
- 18) If the purchase price of a fridge is L.E. 2 400 and its selling price equals 2 688 pounds, then the percentage of the profit =%
- 19) 12 kirats : 1 feddan = :
- 20) $12.5\% = \frac{\dots}{8}$
- 21) If the marks of 6 pupils in one of the tests are 36, 40, 60, 33, 25 and 49, then the range for these marks =
- 22) If the dimensions of a cuboid are equal, then it is called
- 23) The perimeter of one face of a cube is 2 m, then its volume = cm^3 .
- 24) 18% of 300 =
- 25) Length in drawing = drawing scale \times
- 26) The numbers 6, x , 10 and 3 are proportional then $x = \dots$
- 27) The cube has faces and edges.
- 28) 15% of a number = 90, then the number is
- 29)  (in the same pattern)

30) $9 : 12 : 15 = \dots : \dots : \dots$ (in the simplest form)

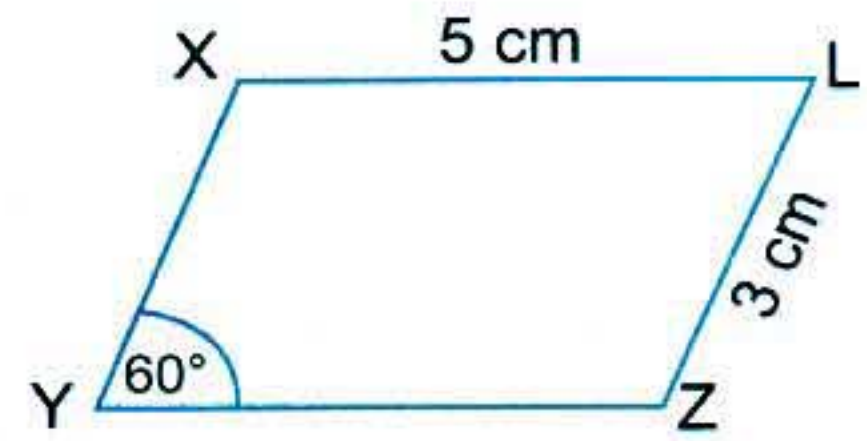
31) If the length in drawing is 3 cm and the length in real life is 6 km, then the drawing scale is $\dots : \dots$

32) The range of distribution = $\dots - \dots$

3 a) In the opposite figure:

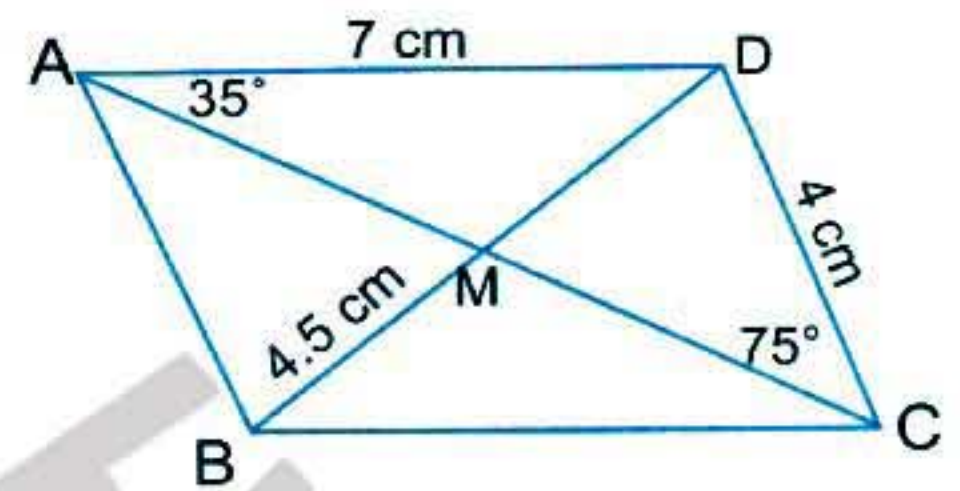
XYZL is a parallelogram in which
 $XL = 5 \text{ cm}$, $LZ = 3 \text{ cm}$ and $m(\angle Y) = 60^\circ$

Find : (1) $m(\angle X)$ (2) $m(\angle L)$
 (3) The perimeter of $\square XYZL$



b) In the opposite figure: ABCD is \square
 in which $m(\angle CAD) = 35^\circ$, $m(\angle ACD) = 75^\circ$
 and $BM = 4.5 \text{ cm}$.

Find : (1) $m(\angle ADC)$ (2) $m(\angle ABC)$
 (3) $m(\angle CAB)$ (4) The perimeter of $\triangle ABD$



4 A map was drawn with a scale 1 : 500 000. If the distance between two cities on the map was 14 cm, find the real distance between these two cities in km.

5 Three persons started a business, the first paid 30 000 pounds, the second paid 50 000 pounds, and the third paid 60 000 pounds, at the end of the year, the net profit was 56 000 pounds. Calculate the share of each of them.

6 The height of a minaret is 65 m and the height of its shadow in a moment equals 26 m. What is the height of a tree in front of this minaret if the length of its shadow equals 15 m in the same moment?

Final Revision and Exams

- 7 The ratio between the length of a rectangle to its width is 7 : 5. If the perimeter of the rectangle is 48 cm, **find:**
- (1) The length of the rectangle. (2) The ratio between length and perimeter.
- (3) The area of the rectangle.
-
- 8 A photo was taken for one of the very delicate insects by enlargement ratio 100 : 1. If the actual length of the insect is 0.2 mm, **find the length of the insect in the picture.**
-
- 9 A man owns a piece of land whose area is 48 kirats. He recommended that third of the area be specialized for building a school and the rest be divided among his son and his two daughters, such that the share of the son is twice the share of the daughter. **Calculate the share of each of them.**
-
- 10 A cuboid basin has internal dimensions of 12 dm , 0.8 m and 1.5 m , if 24 liters of water are poured into it every minute. **Find the time needed for the basin to be filled.**
-
- 11 A shopkeeper sold a refrigerator for L.E. 2 900, if the percentage of his profit is 16%. **Find the buying price.**
-
- 12 **Distribute** L.E. 300 among three persons by the ratio 1 : 2 : 3.
-
- 13 The ratio among three lengths of the sides of a triangle is 2 : 3 : 4. If the perimeter of the triangle is 54 cm, **find the length of each side of the triangle.**
-
- 14 Two machines are used for manufacturing cloth, the first produces 1500 m of cloth in 2 hours, the second produces 1800 m of cloth in two hours and a half, **which of the two machines is more efficient?**



- 15 A box of milk is in the shape of a cube of edge length 12 cm. We want to put a number of these boxes in a box of carton in the shape of a cube of edge length 60 cm. **How many boxes of milk can be put in the carton box?**
-
- 16 A vessel in the shape of a cuboid with dimensions 30 cm, 20 cm and 10 cm is filled with honey.
- Calculate the capacity of the vessel.**
 - If the price of one liter is L.E. 8, find the price of the honey.**
-
- 17 The sum of all dimensions of a cuboid is 48 cm and the ratio between its dimensions is 5 : 4 : 3. **Find its volume.**
-
- 18 A container has 12 liters of honey. We want to put it in smaller vessels, the capacity of each of them is 400 cm^3 , **calculate the number of needed vessels.**
-
- 19 A swimming pool is in the shape of a cuboid whose internal dimensions are 40 m, 30 m and 1.8 m, **find its capacity in liters.**
-
- 20 An aquarium for fish is in the shape of a cube, it has a lid with internal edge length of 3.5 cm, the aquarium is made of glass. **Find the volume of the glass, given that the thickness of the glass is 0.5 cm.**
-
- 21 $8\,400 \text{ cm}^3$ of water is poured into a vessel in the shape of a cuboid with internal dimensions 20 cm, 35 cm and 45 cm, **find:**
- The height of water in the vessel.
 - The volume of water needed to be added to the vessel to fill it completely.
-
- 22 Safaa bought an automatic washing machine for L.E. 3 600. If the discount was 10%, **calculate the original price of the washing machine before the discount.**



Final Revision and Exams

- 23 Khaled bought a flat for L.E. 150 000 and after selling it, he found that the percentage of his loss was 5%. Calculate the selling price of the flat.

24 Complete:

- a) $1 - (35\% + 40\%) = \dots\dots\dots\%$ b) $3.6 \text{ dm}^3 = \dots\dots\dots \text{ liter(s)}$.
 c) $500 \text{ cm}^3 = \dots\dots\dots \text{ mL}$ d) $75\% = \frac{\dots\dots}{4}$
 e) $\frac{1}{2} \text{ liter} = \dots\dots\dots \text{ mL}$

- 25 A piece of land is distributed between two brothers in the ratio 7 : 5 if the share of the first one exceeds the share of the second by 80 m^2 . Find the area of the land and the share of each of the first and the second.

- 26 The following table shows the marks of 40 students in an examination.

Marks	10 –	20 –	30 –	40 –	.....	60 –	Total
Number of students	3	5	8	.....	9	5	40

- a) Complete the table.
 b) Represent these data by frequency curve.
 c) Find the number of students who got 40 marks or more.
 d) Find the number of students who got less than 30 marks.
- 27 In a cuboid, length \times width = 30 cm^2 , width \times height = 20 cm^2 , height \times length = 24 cm^2 . Find the volume of this cuboid. "The dimensions are whole numbers".

Examinations from Different Governorates 2018

1 Cairo Governorate - El Sahel Educational Zone

Answer the following questions:

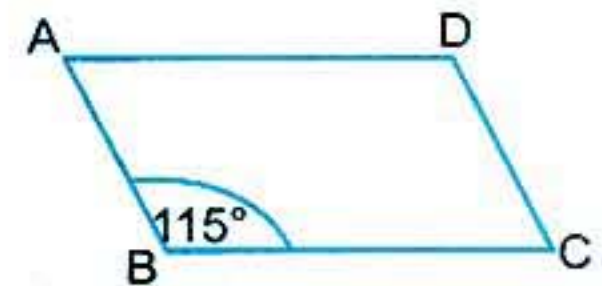
1 Choose the correct answer from those given:

- 1) The ratio between 9 months and 3 years is (9 : 3 or 3 : 9 or 1 : 4 or 4 : 1)
- 2) If the lower limit of a set is 6 and the upper limit is 10, then the center of the set is (5 or 6 or 8 or 10)
- 3) $1650 \div 25$ 1650×25 (> or = or ≤ or <)
- 4) The sum of edges of a cube is 24 cm, then its volume = cm³ (2 or 8 or 12 or 24)
- 5) The perimeter of the square = length of the side × (2 or 3 or 4 or itself)
- 6) $\frac{3}{8} =$ % (12.5 or 25 or 35 or 37.5)
- 7) $\frac{5}{4} : 3 \frac{1}{4} =$ (5 : 13 or 1 : 3 or 3 : 1 or 5 : 9)
- 8) If $\frac{x}{15} = \frac{2}{5}$ then $x + 4 =$ (6 or 8 or 10 or 12)
- 9) If the volume of a cube = 27 cm³, then the area of one of its faces = (9 or 12 or 18 or 24)
- 10) If $\frac{x + 12}{8} = 2$, then $x =$ (6 or 4 or 8 or 16)
- 11) If the perimeter of a cube base is 36 cm, then its volume = (36 or 6 or 729 or 216)
- 12) 25% from 1000 = 50 % from (2000 or 1500 or 1250 or 500)
- 13) If the real length of a tree is 6 m and its drawing length is 3 cm, then the drawing scale = (1:100 or 1:200 or $\frac{1}{300}$ or 1:600)
- 14) 2.8 dm³ = liters (2.8 or 28 or 2800 or 28000)
- 15) The following data are descriptive except (favorite color or name or age or blood species)
- 16) 263.5 cm \approx meters. (26350 or 264 or 3 or 260)



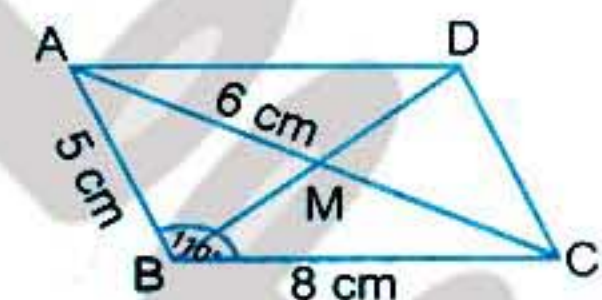
2 Complete each of the following:

- 17) The range of values 3 , 5 , 1 , 6 , 8 is
- 18) A factory produces 1600 lamps in 4 hours, the production rate per hour = lamp / hour
- 19) If $\frac{2}{7} = \frac{x}{21}$ then $x - 2 =$
- 20) Favorite color is from data.
- 21) $12.62 \div 10 =$
- 22) ABCD is a parallelogram in which $m(\angle B) = 115^\circ$,
then $m(\angle D) =$



3 Answer the following questions:

- 23) If the ratio among the share of Amal, Hala and Samira is 3 : 5 : 7 and Samira's share is 42 pounds. **What is the share of both Amal and Hala?**
- 24) A map was drawn on a scale of 1 : 500 000 and the distance between two cities was 10 cm. **Calculate the real distance between the two cities.**
- 25) Emad bought a fridge for 7200 L.E with a discount to 10%. **Calculate the price before the discount.**
- 26) A cuboid with square base, whose side length is 7 cm, and its height is 4 cm, **calculate its volume.**
- 27) **In the following shape:** ABCD is a parallelogram in which $AB = 5$ cm, $BC = 8$ cm, $MA = 6$ cm, $m(\angle ABC) = 110^\circ$, **calculate:**
- $m(\angle BCD)$
 - The perimeter of the triangle ADC.
- 28) The following table shows the ages of visitors to a museum during a certain period.



Draw the frequency curve for this distribution:

Visitors	10 -	20 -	30 -	40 -	50 -	Total
Frequency	7	10	15	20	13	65

2

Cairo Governorate - El Nozha Educational Zone

Answer the following questions:

1 Choose the correct answer from those given:

- 1) $\frac{4}{5} =$ (decimal form) (0.2 or 0.8 or 0.25 or 0.75)
- 2) The sum of measures of the interior angles of a triangle is (90° or 120° or 180° or 360°)
- 3) If $\frac{x}{9} = \frac{4}{3}$, then $x + 2 =$ (12 or 14 or 16 or 20)
- 4) If one angle of a parallelogram is right, then it is called a (rectangle or trapezoid or rhombus or triangle)
- 5) The ratio between 250 grams : $\frac{1}{2}$ kg = :
($\frac{1}{2} : \frac{1}{4}$ or $\frac{1}{4} : \frac{1}{2}$ or $1 : \frac{1}{4}$ or $\frac{1}{4} : 1$)
- 6) The following data are quantitative except (weight or tallness or favorite color or age)
- 7) If $\frac{7}{13} = \frac{x}{52}$, then $x =$ (14 or 21 or 28 or 25)
- 8) 39 days \simeq weeks. (5 or 6 or 7 or 8)
- 9) The following data are descriptive except (6 or 8 or 10 or 12)
(favorite color or birth place or age or blood species)
- 10) 18 kirats : 2 feddans = (in the simplest form) (3:4 or 4:3 or 9:2 or 3:8)
- 11) 4.6 liters = mL. (46 or 460 or 46000 or 4600)
- 12) If the values of a set of data lie between 20 and 60, then the range of these data is (40 or 80 or 60 or 100)
- 13) The perimeter of a circle = ($2\pi r$ or πr^2 or πr or $3r$)
- 14) In the opposite figure: the number of parallelograms
which can be obtained is (4 or 5 or 7 or 9)
- 15) A cube of volume 125 cm^3 , its base area = (25 cm^2 or 25 cm or 5 cm^2 or 5 cm)



2 Complete each of the following:

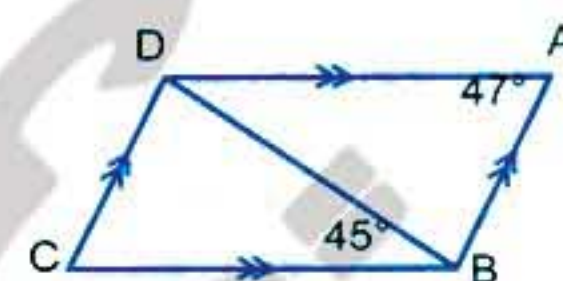
16) $\frac{3}{10} = \dots\dots\dots \%$

17) 16 kirats : 1 feddan = $\dots\dots\dots$:

18) The volume of a cuboid is 125 cm^3 and the area of its base is 25 cm^2 , then its height = $\dots\dots\dots \text{ cm}$ 19) The range of the set of values 7, 5, 3, 6 and 9 is $\dots\dots\dots$.20) If the height of the fence of the villa in the design is 5 cm and its real height is 6 meters then the drawing scale = $\dots\dots\dots$:

21) $1.5 \text{ liter} + 0.5 \text{ dm}^3 = \dots\dots\dots \text{ liter}$.

3 Answer the following questions:

22) Two wire pieces, the ratio between their length is 5 : 9. If the sum of their lengths = 126 meters. **Calculate the length of each piece.**23) If the ratio among the side lengths of a triangle is 2 : 3 : 4 and the perimeter of the triangle = 36 cm. **Calculate the lengths of each side of the triangle.**24) A car consumes 20 liters of benzene to cover a distance of 250 km. **Calculate the rate of consumption of the car to benzene.**25) Heba bought an automatic washing machine for L.E 3600 and the discount was 10%. **Calculate the original price of the washing machine before discount.**26) In the opposite figure: ABCD is a parallelogram, $m(\angle A) = 47^\circ$, $m(\angle DBC) = 45^\circ$ and $AB = 5 \text{ cm}$. **Calculate:**a) the length of \overline{DC} b) $m(\angle ABD)$.

27) The following table shows the marks of 50 students in maths test.

Marks	10 –	20 –	30 –	40 –	Total
Number of students	5	10	15	20	50

a) Draw the frequency curve of this distribution.

b) What is the number of students whose marks are less than 30?



3

Cairo Governorate - Middle Cairo Educational Zone

Answer the following questions:

1 Choose the correct answer from those given:

- 1) If 5, x , 10, 14 are proportional, then $x =$ (10 or 14 or 2 or 7)
- 2) The smallest prime number is (0 or 1 or 2 or 3)
- 3) The sum of measures of each two consecutive angles in the parallelogram = (90° or 180° or 150° or 108°)
- 4) All the following data are quantitative except (age or telephone number or color or weight)
- 5) The ratio between any side length of a square and its perimeter = (1 : 4 or 1 : 2 or 1 : 3 or 1 : 1)
- 6) $7.2 + 0.9 =$ (7.11 or 8.1 or 71.1 or 80.1)
- 7) The range of the values 1, 3, 4, 4, 5 is (1 or 3 or 4 or 5)
- 8) If the numbers 4, x , 12, 18 are proportional quantities, then $x =$ (3 or 6 or 9 or 12)
- 9) The measure of the straight angle = (90° or 180° or 360° or 120°)
- 10) $\frac{1}{2} =$ (0.5 or 0.2 or 0.1 or 0.05)
- 11) $300 \text{ gm} : 1\frac{1}{2} \text{ k.g} =$ (1 : 3 or 1 : 5 or 1 : 10 or 1 : 30)
- 12) If one of the angles of a parallelogram is right and its two adjacent sides are equal in length, then it is called a (rhombus or rectangle or triangle or square)
- 13) The cuboid has edges. (12 or 8 or 6 or 4)
- 14) $1.2 \text{ liters} + 800 \text{ cm}^3 =$ liters. (2 or 9.2 or 200 or 2000)

2 Complete each of the following:

- 15) A machine irrigates 15 feddans in 5 hours, then its rate = feddans/hours.
- 16) $250 \text{ gm} : \frac{1}{2} \text{ kg} =$: (in the simplest form)
- 17) $4.9 \text{ liters} =$ cm^3
- 18) The range of the values 7, 18, 5, 11, 9 is



19) $3 : 4 = \dots\dots\dots \%$

20) If the sum of edge lengths of a cube equals 12 cm, then its volume = $\dots\dots\dots \text{cm}^3$

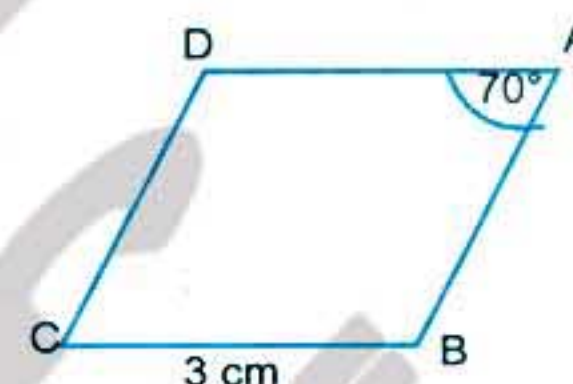
3 Answer the following questions:21) A man bought goods for L.E 4500 and he sold them with a profit 10%. **Find the selling price.**

22) In a mapping picture for some cities is drawn by a drawing scale 1 : 300000.

If the real distance between two cities is 45 km, **find the distance between them on the map.**23) Three persons set up a commercial business, the first paid L.E 40000, the second paid L.E 50000, and the third paid L.E 60000. At the end of the year, the net profit was L.E 45000. **Calculate the share of each of them from the profit.**24) A box is in the shape of a cuboid. Its internal dimensions are 25 cm, 20 cm and 30 cm. It is wanted to be filled with bars of chocolate each of them is cubic with edge length 5 cm. **Calculate the number of bars of chocolate them fill the box completely.**25) In the opposite figure: ABCD is a rhombus in which, $m(\angle A) = 70^\circ$, $BC = 3 \text{ cm}$, **without using measuring tools, find:**

1) $m(\angle C)$

2) The perimeter of the rhombus.



26) In the Orphan's Day, a group of pupils paid sums of money in pounds as shown in the following table:

The sum of money	3 –	5 –	7 –	9 –	11 –	Total
Number of pupils	7	10	15	10	8	50

Represent the previous data by the frequency curve.

4

Giza Governorate - 6th October Educational Directorate

Answer the following questions:

1 Choose the correct answer from those given:

- 1) The sum of measures of angles of the triangle = (180° or 90° or 120° or 360°)
- 2) The ratio between the two numbers $\frac{2}{3}$, $3\frac{1}{3}$ = (1:2 or 2:5 or 1:10 or 1:5)
- 3) If the numbers 4, x , 12, 18 are proportional, then the value of x =
(2 or 3 or 6 or 54)
- 4) A cuboid, its dimensions 2, 3 and 5 cm, then its volume = cm³
(10 or 25 or 30 or 50)
- 5) All the following data are descriptive except
(favorite color or the place of birth or age or blood type)
- 6) $\frac{3}{4}$ = (in decimal form) (0.2 or 0.5 or 0.75 or 0.25)
- 7) 1500 cm³ = liter(es). (0.15 or 15 or 1.5 or 150)
- 8) The ratio between 14 days and 3 weeks is (14:3 or 3:14 or 2:3 or 3:2)
- 9) If an agricultural machine ploughs 14 feddans in 3.5 hours, then the rate of the performance of this machine is
($\frac{1}{4}$ or $2\frac{1}{2}$ or 4 or $10\frac{1}{2}$)
- 10) The smallest number of the following is (0.5 or 0.25 or 0.125 or 0.375)
- 11) If $\frac{21}{7} = \frac{x}{2}$, then x = (6 or 21 or 12 or 7)
- 12) 4200 000 cm³ = m³. (42 or 420 or 4.2 or 4200)
- 13) If $\frac{x+12}{8} = 2$, then x = (6 or 4 or 8 or 16)
- 14) 25 % from 1000 = 50% from (2000 or 1500 or 1250 or 500)
- 15) If the perimeter of a cube base is 36 cm, then its volume = cm³.
(36 or 6 or 729 or 216)

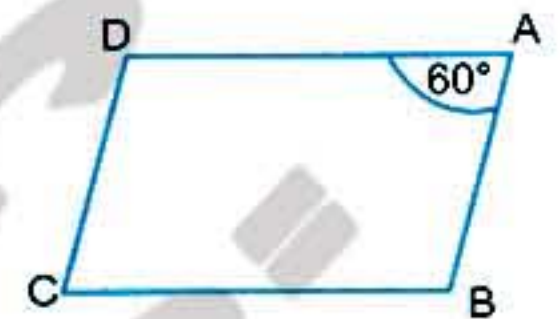


2 Complete each of the following:

- 16) The form of : $\frac{2}{3} = \frac{4}{6} = \frac{8}{12}$ is called
- 17) The ratio between the side length of a square to its perimeter is
- 18) If $a : b = 2 : 3$ and $b : c = 3 : 5$ then $a : c =$:
- 19) The area of the rectangle = \times
- 20) The two diagonals are equal in length in each of and
- 21) The range for the values 7 , 3 , 6 , 9 , 5 is

3 Answer the following questions:

- 22) If the ratio between the measures of the angles of a triangle is 2:3:4, find the measures of each angle.
- 23) A map is drawn with drawing scale 1 : 100000. If the real distance between two cities is 36 kilometers, then find the distance between them on the map.
- 24) A cube of metal, its edge length is 12 cm is melted and transformed into alloy in the shape of a cuboid, its dimensions are 3 cm and 4 cm and 6 cm. Find the number of alloys.
- 25) In the opposite figure: ABCD is a parallelogram in which $m(\angle A) = 60^\circ$, find $m(\angle B)$.



- 26) Nariman bought a refrigerator on the sale by 2185 pounds after discount 5%, find the price of it before the discount.
- 27) The following table shows the marks of 100 pupils in one month in mathematics.

The marks	20 –	30 –	40 –	50 –	Total
Number of pupils	15	30	40	15	100

- a) What is the number of the pupils who got less than 40 mark?
- b) Represent these data by the frequency curve.

5

Cairo Governorate - El-Zeitoun Educational Zone

1 Complete each of the following:

- 1) The volume of the cuboid = ×
- 2) The ratio between the circumference of a circle and its radius is
- 3) The two diagonals are perpendicular in each of and
- 4) $\frac{3}{4} = \dots\dots\dots\%$
- 5) The range of the values 19 , 11 , 9 , 33 , 54 =
- 6) If the drawing length is 2 cm and the real length is 6 m, then the drawing scale is

2 Choose the correct answer:

- 7) $\frac{2}{3} : 3 \frac{1}{3}$ in the simplest form is (1 : 2 or 2 : 15 or 2 : 5 or 1 : 5)
- 8) If 3 , 4 , x and 12 are proportional quantities, then $x = \dots\dots\dots$ (5 or 7 or 8 or 9)
- 9) The sum of measures of the consecutive angles in a parallelogram =
(60° or 90° or 180° or 360°)
- 10) The ratio between 2 feddans : 16 kirates is (3 : 1 or 1 : 3 or 1 : 8 or 8 : 1)
- 11) A car consumes 20 liters of benzene for covering 210 km. How many liters of benzene does the car consume to cover 630 km?
(60 or 120 or 80 or 100)
- 12) The following data are all quantitative except
(age or name or length or weight)
- 13) $0.35 + \frac{9}{20} = \dots\dots\dots\%$ (44 or 70 or 80 or 55)
- 14) The following data are descriptive except
(color or hobby or tallness or blood type)



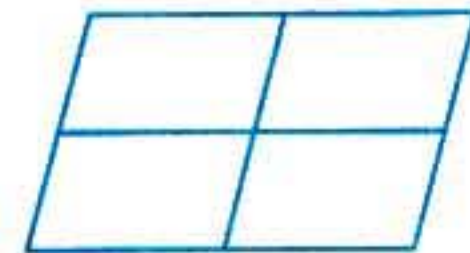
15) The sum of measures of the interior angles of triangle =

(360° or 180° or 90° or 108°)

16) If $\frac{x}{15} = \frac{2}{5}$, then $x + 4 =$

(6 or 8 or 10 or 12)

17) In the opposite figure: the number of parallelograms =



(4 or 5 or 7 or 9)

18) $12\% \div 3\% =$

(4 or 30% or 15% or 4%)

19) $5 \text{ cm}^3 =$ milliliters

(5000 or 0.005 or 5 or 50)

20) If the sum of areas of all faces of a cube equals 54 cm^2 , then its volume
= cm^3 .

(9 or 2916 or 27 or 81)

3 Answer the following questions:

21) If the ratio between the measurements of angles in a triangle is 5 : 6 : 7
then find the measures for each angle in the triangle.

22) Sara deposited L.E 9000 in a bank. If the percentage of interest is 11 % per year,
then what is the amount of this sum after one year?

23) XYZL is a parallelogram in which $m(\angle Y) = 118^\circ$,
 $m(\angle YXZ) = 35^\circ$, find $m(\angle L)$ and $m(\angle LXZ)$.



24) Find in cm^3 the volume of the cuboid whose dimensions are 6 cm, 5 cm and 4 cm.

25) The following table shows the ages of visitors to an exhibition within an hour of the day.

Visitors' ages	10 –	20 –	30 –	40 –	50 –	Total
Number of visitors	6	9	12	10	8	45

Draw the frequency curve for this distribution.

26) A cubic vessel, its internal edge length equals 15 cm, it was filled with honey.

First: Calculate the capacity of the vessel in liter.

Second: Calculate the price of honey if the price of each liter is L.E 8.



6

Giza Governorate - Inspection of Mathematics

Answer the following questions:

1 Choose the correct answer from those given:

- 1) The sum of measures of interior angles of a triangle =
(180° or 90° or 120° or 360°)
- 2) 250 grams : $\frac{1}{2}$ kg = :
(2 : 1 or 1 : 3 or 1 : 2 or 1 : 4)
- 3) If $\frac{2}{7} = \frac{8}{x}$, then $x =$
(56 or 28 or 14 or 46)
- 4) If one angle in the parallelogram is right, then it will be a
(square or rectangle or rhombus or cube)
- 5) All the following data are descriptive except
(favorite color or the place of birth or age or blood type)
- 6) The range of the data: 7 , 3 , 6 , 9 and 5 is
(4 or 2 or 6 or 12)
- 7) 1500 cm³ = liter(s).
(0.15 or 1.5 or 15 or 150)
- 8) If the volume of a cuboid is 24 cm³ and the area of its base is 6 cm²,
then its height = cm
(3 or 4 or 12 or 18)
- 9) A machine irrigates 15 feddans in 6 hours, then the performance of this machine
is feddan / hour.
($\frac{1}{4}$ or 2 $\frac{1}{2}$ or 4 or 10 $\frac{1}{2}$)
- 10) If $\frac{2}{7} = \frac{x}{21}$, then $x =$
(6 or 21 or 12 or 7)
- 11) 4 200 000 cm³ = m³
(42 or 420 or 4.2 or 4200)
- 12) $\frac{3}{8} + \frac{1}{8} =$
($\frac{4}{16}$ or $\frac{1}{4}$ or $\frac{1}{2}$ or $\frac{3}{8}$)
- 13) If $\frac{4}{7} = \frac{x}{14}$, then $x =$
(6 or 8 or 10 or 12)
- 14) The smallest prime number is
(0 or 1 or 2 or 3)

2 Complete each of the following:

- 15) The area of the rectangle = ×



16) The ratio between the side length of the square and its perimeter =

17) Hazem drinks 21 cups of juice in a week then the rate of what he drinks per day =

18) $\frac{3}{4} = \dots\dots\dots \%$

19) 2.65 liters = cm^3

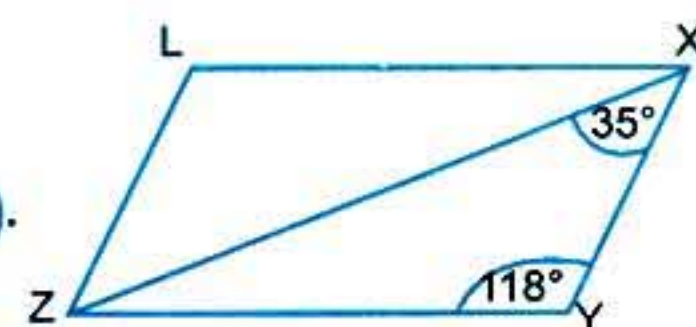
20) $\frac{1}{2} = \dots\dots\dots$ (decimal fraction)

3 Answer the following questions:

21) The ratio between $A : B = 4 : 3$ and the ratio between $B : C = 2 : 3$, then find the ratio among A , B , C.

22) Hany, Khaled and Fady are involved in a business. Hany paid 30000 L.E, Khaled paid 40000 L.E and Fady paid 50000 L.E. At the end of the year, the company lost 6000 L.E. Calculate the share of the loss each of them.

23) In the opposite figure: XYZL is a parallelogram in which $m(\angle Y) = 118^\circ$ and $m(\angle YXZ) = 35^\circ$. Find $m(\angle L)$ and $m(\angle LXZ)$.



24) A vessel in the shape of a cube, the length of its inner edge is 15 cm. If it's full of molasses, find its capacity in liters.

25) A shop owner of an electric sets sold a refrigerator by 3180 pounds. If the profit is 6%, find the buying price.

26) The following table shows the marks of 100 pupils in one of the maths monthly tests.

The marks	10 –	20 –	30 –	40 – 50	Total
Number of pupils	15	30	40	15	100

Draw the frequency curve for this distribution.

7

Giza Governorate - El Omrania Educational Zone

1 Complete each of the following:

- 1) If A is twice B, then $A : B = \dots : \dots$
- 2) $25\% = \frac{\dots}{\dots}$ (in the simplest form).
- 3) If the dimensions of a cuboid are equal, then it is called a
- 4) An agricultural tractor ploughs 6 feddans in 3 hours, then the rate of the performance of this machine is
- 5) The circumference of the circle =
- 6) The range of the set of the values 7 , 3 , 15 and 8 is

2 Choose the correct answer:

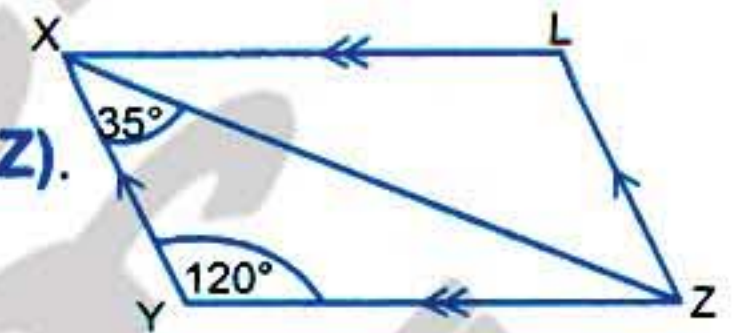
- 7) $7 \dots \{55, 77, 3\}$ (\in or \notin or \subset or \supset)
- 8) $\frac{3}{10} = \dots \%$ (10 or 50 or 30 or 20)
- 9) The two diagonals are equal in length in
(rhombus or trapezium or triangle or square)
- 10) The volume of a cube of edge length 3 cm = cm (27 or 9 or 15 or 3)
- 11) If the drawing length is 6 cm and the real length 6 meters, then the drawing scale =
(1 : 10 or 1 : 100 or 1 : 1000 or 1 : 1)
- 12) $3 \frac{3}{4} = \dots$ ($\frac{15}{4}$ or $\frac{4}{15}$ or $\frac{13}{4}$ or $\frac{10}{3}$)
- 13) $36.5 \div \dots = 3.65$ (10 or 100 or 1000 or 1)
- 14) If the numbers 3 , 5 , x and 20 are proportional, then $x = \dots$
(6 or 12 or 15 or 21)
- 15) The sum of measures of the interior angles of the triangle =
(90° or 108° or 120° or 180°)



- 16) The two diagonals are perpendicular and bisect each other in each of
(square and rhombus **or** rhombus and rectangle **or** rectangle and trapezium **or** square and rectangle)
- 17) The ratio between 250 grams : $\frac{1}{2}$ kg =
($\frac{1}{2} : \frac{1}{4}$ **or** $\frac{1}{4} : \frac{1}{2}$ **or** $1\frac{1}{4} : \frac{1}{2}$ **or** $\frac{1}{4} : 1\frac{1}{2}$)
- 18) If $\frac{x}{9} = \frac{4}{3}$, then $x + 2 =$ (12 **or** 14 **or** 16 **or** 20)
- 19) $\frac{4}{5} =$ (decimal form) (0.2 **or** 0.8 **or** 0.25 **or** 0.75)
- 20) If $\frac{4}{6} = \frac{12}{x}$, then $x =$ (16 **or** 18 **or** 20 **or** 22)

3 Answer the following questions:

- 21) Heba bought a vacuum cleaner for 220 pounds with a discount 20%. **Calculate the price before discount.**
- 22) A picture of a house was drawn with a drawing scale 1 : 1000. If the height of the house in the picture is 3 cm, **find the real height of the house.**
- 23) In a primary school, the number of pupils in the first, second and third grades is 240 pupils. If the ratio between the numbers of pupils in the three grades is 5 : 4 : 3, **calculate the number of pupils in each grade of them.**
- 24) In the opposite figure: XYZL is a parallelogram in which $m(\angle Y) = 120^\circ$, $m(\angle YXZ) = 35^\circ$, **find $m(\angle L)$ and $m(\angle LXZ)$.**



- 25) A swimming pool in the shape of a cuboid with dimensions 30 m , 40 m and 2 m. **Find its capacity in liters.**
- 26) The following table shows the numbers of hours which the pupils spend in front of the computer.

Number of hours	1 -	2 -	3 -	4 -	5 -	Total
Number of students	8	12	15	6	4	45

Represent these data by frequency curve.

8

Giza Governorate - Dokki Educational Directorate

Answer the following questions:

1 Choose the correct answer:

- 1) The range of the data set 7 , 3 , 6 , 9 , 5 is (2 or 6 or 12)
- 2) The diagonals are perpendicular in (rectangle or square or parallelogram)
- 3) If the real length is 5 m , and the drawing length is 5 cm, then the drawing scale is (1:10 or 1:1000 or 1:100)
- 4) If $\frac{5}{4} = \frac{10}{x}$, then $x =$ (5 or 8 or 4)
- 5) $\frac{3}{4} =$ (0.2 or 0.5 or 0.25 or 0.75)
- 6) If $\frac{x}{9} = 15\%$, then $x =$ (13.5 or 35 or 135 or 1.35)
- 7) $\frac{4}{5} =$ % (50 or 60 or 70 or 80)
- 8) $6500 \text{ dm}^3 =$ m^3 (6.5 or 65 or 605 or 650)
- 9) If the numbers 4 , x , 12 and 18 are proportional, then the value of $x =$ (2 or 3 or 6 or 9)
- 10) The two diagonals are equal in length in the (parallelogram or rhombus or trapezium or square)
- 11) $\frac{1}{2} =$ (0.5 or 0.2 or 0.1 or 0.05)
- 12) 39 days \simeq weeks (5 or 6 or 7 or 8)
- 13) A cube of volume 125 cm^3 , then the area of its base = (25 cm^2 or 25 cm or 5 cm^2 or 5 cm)
- 14) The measure of the straight angle = (90° or 180° or 270° or 360°)

2 Complete each of the following:

- 15) 4 kilograms : 1000 grams = : (in the simplest form)
- 16) $\frac{7}{10} =$ %
- 17) The volume of a cuboid = area of base \times



18) In a parallelogram, each two opposite angles are

19) $\frac{2}{5} + 30\% = \dots\dots\dots$

20) $65 \text{ dm}^3 = \dots\dots\dots$ liters

3 Put (✓) for the correct sentence and (X) for the wrong one:

21) The preferred type of data is quantitative. ()

22) The volume of the cube whose edge is 2 cm is 8 cm^3 . ()

23) The numbers 3 , 4 , 12 and 16 are proportional numbers. ()

24) If $x : y = 4 : 5$ and $y : z = 5 : 3$ then $x : z = 3 : 4$ ()

25) Join from column (A) what is suitable from column (B):

(A)	(B)
1) The number of faces of a cube = faces	90°
2) If the drawing scale is > 1 , then it means	$1 : 4$
3) The measure of each angle of a square =	magnification
4) The ratio between the length of the side of a rhombus to its perimeter is	6

26) In the opposite figure: ABCD is a parallelogram if $m(\angle C) = 70^\circ$:

1) $m(\angle A) = \dots\dots\dots^\circ$

2) $m(\angle B) = \dots\dots\dots^\circ$



27) The following table represents the marks of 50 students in a monthly test of mathematics.

The marks	10 –	20 –	30 –	40 – 50	Total
Number of students	6	10	20	14	50

Complete:

1) The number of students who got 30 marks or more = students.

2) The number of students who got less than 30 marks = students.



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9

Alexandria Governorate - Directorate of Education

Answer the following questions:

1 Choose the correct answer from those given:

- 1) If an agriculture tractor ploughs 28 feddans in 4 hours, then the time needed to plough 42 feddans is (4 or 6 or 7 or 8)
- 2) 55 mL = cm^3 (55 or 5.5 or 550 or 0.55)
- 3) The range of the set of values 3 , 12 , 2 , 9 , 17 and 15 is (2 or 12 or 14 or 15)
- 4) If $X = \{2, 1\}$, $Y = \{5, 1\}$, then $X \cap Y = \dots\dots\dots$ (\emptyset or $\{5, 2, 1\}$ or $\{1\}$ or $\{5, 2\}$)
- 5) $0.0635 \simeq \dots\dots\dots$ to the nearest hundredth. (0.06 or 0.063 or 0.07 or 0.63)
- 6) If the number of sets of a frequency table is 5 and the range is 10, then the length of the set = (2 or 5 or 15 or 50)
- 7) If $\frac{x+4}{2} = 5$, then $x = \dots\dots\dots$ (14 or 2 or 6 or 3)
- 8) $5 \times 7 = 5 \times 5 + 5 \times \dots\dots\dots$ (0 or 2 or 5 or 7)
- 9) $5 \text{ m}^3 = \dots\dots\dots \text{dm}^3$ (5 or 50 or 500 or 5000)
- 10) $1.2 \text{ liters} + 800 \text{ cm}^3 = \dots\dots\dots \text{liters}$ (2 or 9.2 or 200 or 2000)
- 11) If 2 , x , 8 , 20 are proportional, then $x = \dots\dots\dots$ (2 or 5 or 7 or 1)
- 12) The centimeter cube is a unit for measuring
(the perimeter or the area or the volume or the length)
- 13) $\{3, 5\} \cap \{4, 5\} = \dots\dots\dots$ ($\{3\}$ or $\{5\}$ or $\{4\}$ or $\{3, 4, 5\}$)
- 14) is quantitative data.

(The favorite color or The birth place or The blood species or The volume)

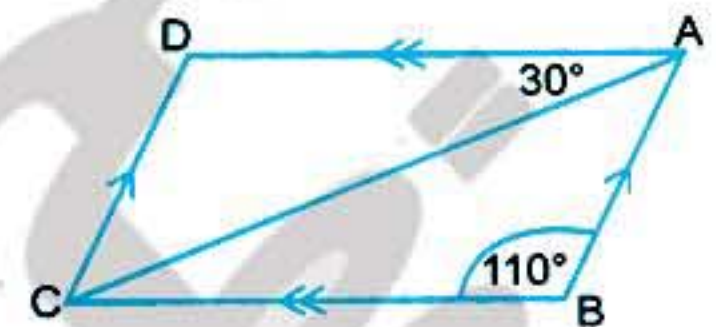


2 Complete each of the following:

- 15) The favourite color and the birth place are from data.
- 16) The ratio between the side length of the square and its perimeter = :
- 17) The parallelogram is a rectangle if
- 18) If the drawing scale < 1 this expresses
- 19) The surface area of the triangle = \times \times
- 20) If $\frac{4}{6} = \frac{12}{x}$, then $x + 2 =$

3 Answer the following questions:

- 21) a, b and c are three numbers such that the ratio $a : b = 4 : 3$ and the ratio $b : c = 2 : 3$.
Find the ratio among the three numbers a, b, c.
- 22) In one of commercial shops, the percentage of the discount on sale was 20 %. If Ahmed bought a pair of trousers and the price written on it was LE 80, find what Ahmed paid after discount.
- 23) Ahmed drew a picture for his brother Osama with a drawing scale 1 : 40. If the real height of Osama is 160 cm, what is the height in the picture?
- 24) A container has 12 liters of oil. If the oil is wanted to be put in small bottles, the capacity of each is 400 cm³, calculate the number of bottles which are needed.
- 25) The opposite figure shows a parallelogram in which $m(\angle B) = 110^\circ$ and $m(\angle DAC) = 30^\circ$.
Find $m(\angle D)$ and $m(\angle BAC)$.
- 26) The following table shows the extra money which 100 workers got in a month in a factory.



The extra money	20 –	30 –	40 –	50 –	60 –	70 –	Total
Number of workers	20	15	30	20	10	5	100

- 1) What is the number of workers who obtained extra money less than 50 pounds?
- 2) Draw the frequency curve for this distribution.

10

Qaluobia Governorate - Benha Educational Zone

1 Complete each of the following:

- 1) If the marks of 4 pupils in a maths test are 22 , 39 , 62 and 54, then the range of the marks =
- 2) The ratio between 18 hours and one day is : (in the simplest form)
- 3) If $\frac{x + 12}{6} = 4$, then $x =$
- 4) The difference between the greatest value and the smallest value in a set of individuals is called
- 5) $1500 \text{ cm}^3 =$ liters.
- 6) A machine produces 600 meters of clothes regularly in one hour and half, then the rate of production in meter per hour =

2 Choose the correct answer:

- 7) The opposite data are descriptive except
(the favorite color **or** birthday **or** age **or** blood species)
- 8) If the drawing length of an object is 2 cm and its real length equals 20 meters then the drawing scale =
(1 : 10 **or** 1 : 100 **or** 1 : 1000 **or** 1 : 10000)
- 9) 30% of a number equals
(its third **or** its three tenths **or** its three fifths **or** its three sevenths)
- 10) Look at the following pattern $\triangle \square \triangle \square \square \triangle \triangle \square \square \square \triangle$, which pattern of the following has the same previous pattern?
($\square \square \square \square \square \square \square \square \square$ **or** $\square \square \square \square \square \square \square \square \square$ **or** $\square \square \square \square \square \square \square \square \square$ **or** $\square \square \square \square \square \square \square \square \square$)
- 11) In the following figure:
ABCD is a parallelogram $m(\angle A) = 60^\circ$, then
 $m(\angle B) =$ (30° **or** 60° **or** 90° **or** 120°)
- 12) The greatest time in the following is
(3600 seconds **or** 900 minutes **or** 12 hours **or** one day)
- 13) $\frac{1}{5} =$ % (10 **or** 20 **or** 30 **or** 40)
- 14) If the marks of 3 students in one exam is (27 , 36 , 57), then
the range of these marks = (30 **or** 20 **or** 40 **or** 50)



72

GEM / MATH / Primary 6



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- 15) If the numbers 5 , 8 , 15 , x are proportional, then $x =$
(21 or 42 or 24 or 15)
- 16) The sum of measures of the interior angles of a triangle =
(180° or 90° or 80° or 108°)
- 17) If $\frac{x}{5} = 40\%$, then $x =$
(5 or 4 or 3 or 2)
- 18) $\frac{3}{4} =$
(0.2 or 0.75 or 0.25 or 0.5)
- 19) If 97 is the greatest value of a set and its range is 67, then the smallest value is
.....
(164 or 30 or 82 or 14)
- 20) $7.2 + 0.9 =$
(7.11 or 8.1 or 71.1 or 80.1)

3 Answer the following questions:

- 21) If the price of the packet of soap powder increased from L.E 6 to L.E 7.5,
find the percentage of the increase.
- 22) ABC is a triangle in which $AB : BC : CA = 3 : 5 : 7$, if the difference between the lengths of \overline{AB} and \overline{BC} is 4 cm, find the lengths of the sides of the triangle and its perimeter.
- 23) Three persons set up a company. At the end of the year the profit has been divided. The share of the first = $\frac{5}{3}$ the share of the second, the share of the second = $\frac{4}{3}$ the share of the third. If the share of the first is more than the share of the third by 8250 pounds, **what is the share of each of them?**
- 24) A container in the shape of a cube, the length of its interior edge equals 20 cm. If it's filled with molasses, **calculate its capacity.**
- 25) A cuboid, the perimeter of its base is 36 cm and the ratio between the length and width of its base equals 5 : 4. **Find its length, width and calculate its volume if its height equals 12 cm.**
- 26) The following table shows the marks of 100 students in maths in one of the months.

Marks	20 –	30 –	40 –	50 –	Sum
Number of students	15	30	40	15	100

Draw the frequency curve for this distribution.



11

Sharkia Governorate - Diarb Negm Directorate

Answer the following questions:

1 Choose the correct answer from those given:

1) The fraction which is represented by the shaded part =

$$\left(\frac{1}{2} \text{ or } \frac{1}{4} \text{ or } \frac{1}{3} \text{ or } \frac{4}{7}\right)$$



2) The number of the cube edges =

(8 or 6 or 12 or 3)

3) $0.23 \text{ m}^3 = \dots\dots\dots$ liters

(0.23 or 23000 or 0.023 or 230)

4) The ratio between 15 hours and one day in the simplest form =

(1 : 15 or 15 : 1 or 8 : 5 or 5 : 8)

5) If $\frac{4}{6} = \frac{8}{x}$, then $x + 2 = \dots\dots\dots$

(14 or 16 or 18 or 20)

6) All the following data are quantitative except

(age or length or number of sons or favorite color)

7) The following data are descriptive except

(the address or the area or the name or the birth place)

8) $\{3, 5\} \cap \{4, 5\} = \dots\dots\dots$

({3} or {5} or {4} or {3, 4, 5})

9) is quantitative data.

(The favorite color or The birth place or The volume or The blood species)

10) If 2, x , 6, 9 are proportional, then $x = \dots\dots\dots$

(4 or 6 or 3 or 5)

11) The range of the values (2, 2, 7, 13, 18) is

(4 or 5 or 11 or 16)

12) $45 \text{ dm}^3 = \dots\dots\dots$ liters.

(450 or 45 or 4.5 or 4500)

13) $65\% = \dots\dots\dots$

(65 or 0.65 or 650 or 6.5)

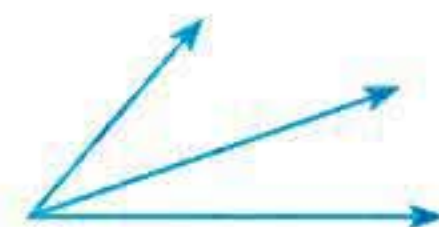
14) The sum of measures of the interior angles of a triangle =

(90° or 360° or 60° or 180°)

2 Complete each of the following:

15) In the opposite figure:

The number of acute angles =



74

GEM / MATH / Primary 6

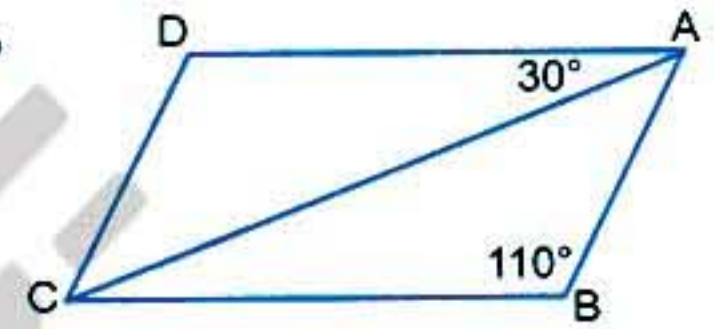


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- 16) The range of the following data 29 , 33 , 57 , 40 , 36 and 49 is
- 17) $0.12 = \dots\dots\dots\%$
- 18) A car covers a distance of 180 km. In three hours, the rate of velocity
= km /hr.
- 19) The next term of the pattern $\square \bigcirc \square \bigcirc$ is
- 20) If the range of some values = 40 and the number of sets = 10, then the length of the set =

3 Answer the following questions

- 21) In a primary school, the number of students is 560. If the number of girls
= $\frac{3}{5}$ boys, **find the number of boys and girls.**
- 22) Ahmed drew a picture for his brother Osama by a drawing scale 1 : 40. If its real
length is 160 cm, **find the length in picture.**
- 23) Khaled bought a flat by 150000 L.E. After selling it, he found the percentage of loss =
5%. **Find the selling price of the flat.**
- 24) The opposite figure represents a parallelogram, $m(\angle B) = 110^\circ$
and $m(\angle DAC) = 30^\circ$,
find $m(\angle D)$, $m(\angle BAC)$ and $m(\angle ACD)$.
- 25) A cube of cheese with edge length 15 cm, it's wanted to be divided into small cubes
of edge length 3 cm. **Find the number of resulted small cubes of cheese.**
- 26) The following table shows the studying hours by 40 students daily.



Sets	1 -	2 -	3 -	4 -	5 - 6	Sum
Number	6	3	8	12	11	40

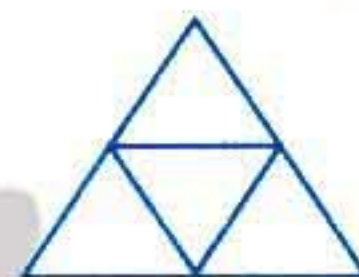
Represent these data by frequency curve.

12 Qalubia Governorate - Qalubia Educational Administration

Answer the following questions:

1 Choose the correct answer from those given:

- 1) $\frac{3}{4} = \dots\dots\dots$ (decimal form) (0.2 or 0.5 or 0.25 or 0.75)
- 2) $\frac{24}{5} = \dots\dots\dots$ ($4\frac{1}{5}$ or $3\frac{2}{5}$ or $4\frac{4}{5}$ or $2\frac{4}{5}$)
- 3) 8 hours : $3\frac{1}{3}$ days = $\dots\dots\dots$ (1 : 10 or 8 : 9 or 1 : 3 or 1 : 4)
- 4) If $\frac{4}{6} = \frac{12}{x}$, then $x + 2 = \dots\dots\dots$ (16 or 18 or 20 or 22)
- 5) The sum of the measures of any two consecutive angles in the parallelogram = $\dots\dots\dots$ (108° or 180° or 360° or 90°)
- 6) The range of the set of values 50 , 25 , 35 and 20 is $\dots\dots\dots$ (10 or 20 or 30 or 40)
- 7) The circumference of the circle = $\dots\dots\dots$ (πr or πr^2 or $2\pi r$ or $3\pi r$)
- 8) The following data are quantitative except $\dots\dots\dots$ (age or tallness or favorite color or weight)
- 9) In the opposite figure: The number of triangles is $\dots\dots\dots$ (4 or 5 or 7 or 9)
- 10) If the real length of a tree is 6 meters, and the drawing length is 6 cm, then the drawing scale = $\dots\dots\dots$ (1 : 10 or 1 : 100 or 1 : 1000 or 1 : 600)
- 11) If $\frac{x}{6} = \frac{2}{3}$, then $x = \dots\dots\dots$ (5 or 4 or 3 or 2)
- 12) The range of the set of the values 7 , 3 , 6 , 9 , 5 is $\dots\dots\dots$ (4 or 2 or 6 or 12)
- 13) 7 $\dots\dots\dots$ {17 , 707} (\subset or $\not\subset$ or \in or \notin)
- 14) $6.7 \text{ dm}^3 = \dots\dots\dots$ liters. (67 or 6.7 or 670 or 6700)



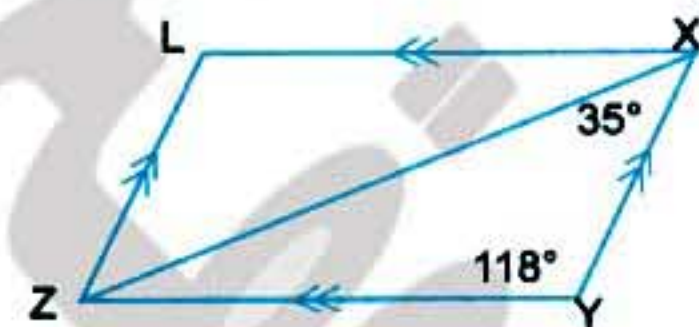
2 Complete each of the following:

- 15) The area of the triangle = $\frac{1}{2}$ the length $\dots\dots\dots \times \dots\dots\dots$

- 16) a , b and c are three numbers such that the ratio $a : b = 4 : 3$ and the ratio $b : c = 2 : 3$ then the ratio $a : c = \dots\dots\dots$:
- 17) If $\frac{x}{5} = 40\%$, then $x = \dots\dots\dots$
- 18) $1.5 \text{ liter} + 0.5 \text{ dm}^3 + 500 \text{ cm}^3 = \dots\dots\dots$ liters.
- 19) The following data (age - date - phone number) is $\dots\dots\dots$.
- 20) The number of sets = $\frac{\dots\dots\dots}{\text{the length of set}}$

3 Answer the following questions:

- 21) A triangular piece of land, the ratio between the length of its sides is $4 : 6 : 7$. If the perimeter of this piece of land equals 51 meters, **find the lengths of the sides of this land.**
- 22) A map is drawn for some cities by a drawing scale $1 : 400000$. If the real distance between two cities is 46 km, **find the distance between them on the map.**
- 23) Heba bought an electric sweeping machine for L.E 850. If the discount is 15%. **calculate the original price of the sweeping machine before discount.**
- 24) A metallic cube of edge length 12 cm is converted into ingots in the shape of cuboid, each of them of dimensions 3 , 4 and 6 cm. **Calculate the number of ingots that are obtained.**
- 25) The opposite figure:
 $m(\angle Y) = 118^\circ$, $m(\angle YXZ) = 35^\circ$,
find $m(\angle L)$ and $m(\angle LXZ)$.



- 26) The following table shows the marks of 100 students in one month in math test.

Marks	10 –	20 –	30 –	40 – 50	Total
Number of students	15	30	40	15	100

Draw the frequency curve for this distribution.

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Gharbia Governorate - Zefta Educational Directorate

Answer the following questions:

1 Choose the correct answer from those given:

- 1) $72.45 \div 100 =$ (724.5 or 7245 or 0.7245 or 7.245)
- 2) The sum of interior angles of a triangle = (170° or 200° or 360° or 180°)
- 3) If $\frac{4}{9} = \frac{16}{x}$, then $x =$ (81 or 27 or 36 or 18)
- 4) $\frac{5}{20} =$ % (20 or 25 or 35 or 50)
- 5) If the dimensions of a cuboid are 3 cm, 4 cm and 6 cm, then its volume =
(40 cm^3 or 60 cm^3 or 52 cm^3 or 72 cm^3)
- 6) The following data are descriptive except
(color or address or age or blood type)
- 7) If $\frac{8}{x} = 0.5$, then $x =$ (8 or 12 or 16 or 21)
- 8) If the length of the diagonal of the square is 8 cm, then its area =
(64 cm^2 or 32 cm^2 or 16 cm^2 or 8 cm^2)
- 9) If the volume of a cube equals 125 cm^3 , then its base area =
(35 cm^2 or 25 cm^2 or 15 cm^2 or 5 cm^2)
- 10) The following data are quantitative except
(date or the birth place or age or grade)
- 11) $5 \text{ cm}^3 =$ milliliters. (500 or 0.005 or 5 or 50)
- 12) The ratio between 3 feddans : 40 kirats = ($\frac{3}{4}$ or $\frac{5}{9}$ or $\frac{9}{5}$ or $\frac{4}{3}$)
- 13) The range of the set of values 5, 4, 8, 12, 7 is (8 or 7 or 5 or 4)
- 14) If $\frac{3}{5} = \frac{9}{x}$, then $x =$ (3 or 5 or 15 or 27)

2 Complete each of the following:

- 15) If $a : b = 2 : 3$, $b : c = 3 : 5$, then $a : c =$
- 16) If $\frac{x}{20} = 45\%$, then $x =$

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GEM / MATH / Primary 6



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- 17) If the volume of a cube is 8000 cm^3 , then its edge length = cm
- 18) 25 kirats : 3 feddans = :
- 19) The two diagonals are equal in length and perpendicular in
- 20) The range of the set of values 15 , 13 , 12 and 8 is

3 Answer the following questions:

- 21) If the buying price of a refrigerator is L.E 3400 and its selling price is L.E 3740, **find the percent of the profit.**
- 22) A water tap is leaking 20 liters of water in 5 hours. **Find the leaking rate per hour.**
- 23) The price of a mobile phone before discount is L.E 2400. If the discount is 20 %, **what is the price after the discount?**
- 24) A tin in the shape of a cuboid. Its dimensions are 20 cm , 30 cm and 40 cm. If its filled with honey, **find the price of the honey if the price of one liter is L.E 20.**
- 25) A father divided a sum of money between Sara and Omar in the ratio 3 : 5. If the share of Omar exceeds the share of Sara by L.E 200, **find the share of each one.**
- 26) The following frequency distribution table represents the daily wages of 50 workers in a factory.

Wages	10 –	20 –	30 –	40 –	50 –	Sum
Number of workers	5	12	10	15	8	50

- 1) **Draw** the frequency curve for this distribution.
- 2) **Find** the percentage of the number of workers whose wages begin from L.E 30 to less than L.E 50.



14

Ismailia Governorate - El Qantra Gharb Educational Zone

Answer the following questions:

1 Choose the correct answer from those given:

- 1) If the perimeter of a square equals 32 cm, then its side length = cm
(3 or 5 or 7 or 8)
- 2) The prime number which is direct after number 17 is (11 or 13 or 19 or 23)
- 3) 150 cm : 3 m = : (1 : 2 or 1 : 3 or 1 : 5 or 1 : 7)
- 4) $\frac{1}{4} = \dots\dots\dots\%$ (20 or 25 or 50 or 75)
- 5) The number of the faces of a cube = (4 or 5 or 6 or 8)
- 6) The following data are descriptive except
(color or birth place or blood species or age)
- 7) The range of the set of values 7 , 3 , 6 , 9 , 5 equals (3 or 4 or 6 or 17)
- 8) 4.6 liters = mL. (46 or 460 or 4600 or 46000)
- 9) The length of an insect in the picture is 4 cm, and its real length is 2 mm, then
the drawing scale is (1 : 20 or 1 : 80 or 20 : 1 or 80 : 1)
- 10) The diagonals are perpendicular in each of
(square and rectangle or rhombus and rectangle or square and rhombus or parallelogram and rectangle)
- 11) is quantitative data.
(The favorite color or The birth place or Blood species or The age)
- 12) $6500 \text{ dm}^3 = \dots\dots\dots \text{ m}^3$ (65000 or 650 or 65 or 6.5)
- 13) 7 {17 , 707} (\subset or $\not\subset$ or \in or \notin)
- 14) $6.7 \text{ dm}^3 = \dots\dots\dots$ liters (67 or 6.7 or 670 or 6700)

2 Complete each of the following:

- 15) The sum of the measures of the interior angles of a triangle is
- 16) The ratio between 18 hours and one day : (in the simplest form)

80

GEM / MATH / Primary 6

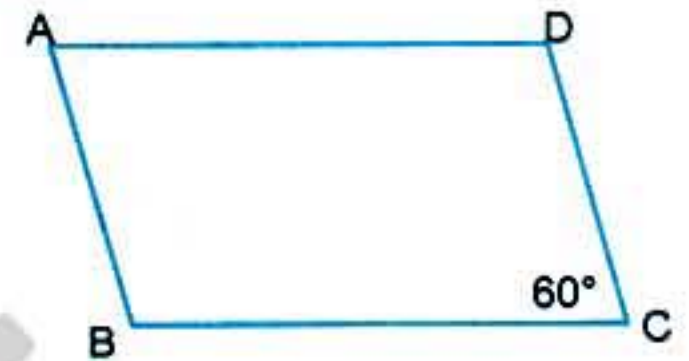


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- 17) If the number x , 18, 6, 9 are proportional, then $x = \dots\dots\dots$
- 18) If the sum of lengths of all edges of a cube equals 24 cm, then the volume = $\dots\dots\dots \text{cm}^3$
- 19) The kinds of statistic data are $\dots\dots\dots$ and $\dots\dots\dots$
- 20) The range of the values 2, 7, 6, 9 and 5 equals $\dots\dots\dots$

3 Answer the following questions:

- 21) A car covers 360 km in 4 hours. Calculate the rate of the covered distance per hour.
- 22) If the height of a building in a picture equals 3 cm and the real height equals 18 m.
Calculate the drawing scale of that picture.
- 23) The number of pupils of a primary school is 500 pupils, 7% of them were absent one day. Calculate the number of present pupils that day.
- 24) Find the volume of a cuboid of dimensions 6 cm, 4 cm and 3 cm.
- 25) In the opposite figure:
ABCD is a parallelogram in which $m(\angle C) = 60^\circ$, $AB = 4 \text{ cm}$.
Find: 1) The side length \overline{DC} 2) $m(\angle A)$
- 26) The following table shows the number of hours which 40 pupils spend in studying their lessons every day.



No. of hours	1 –	2 –	3 –	4 –	5 – 6	Total
No. of pupils	6	3	8	12	11	40

Represent these data by the frequency curve.

15

Suez Governorate - Directorate of Education

Answer the following questions:

1 Choose the correct answer from those given:

- 1) If the values of a frequency distribution lie between 5, 35, then the range of this distribution = (7 or 30 or 40 or 175)
- 2) $5600 \text{ cm}^3 = \dots\dots\dots$ liters. (5.6 or 6.5 or 56 or 560)
- 3) The following data are descriptive except
(favorite color or birth place or age or blood species)
- 4) The numbers (3, 5, 7, 9) are numbers. (odd or even or prime or otherwise)
- 5) $45\% + \dots\dots\dots\% + 30\% = 100\%$ (25 or 30 or 35 or 70)
- 6) $\frac{1}{8} = \dots\dots\dots$ (in decimal form) (0.5 or 0.25 or 0.125 or 0.375)
- 7) $\frac{x}{21} = \frac{2}{7}$, then $x - 3 = \dots\dots\dots$ (6 or 4 or 3 or 2)
- 8) The lowest common multiple of 6, 9 is (3 or 6 or 9 or 18)
- 9) $0.03 < \dots\dots\dots$ (0.02 or 0.1 or 0.009 or 0.011)
- 10) The range of the set of values 7, 3, 6, 9, 5 is (9 or 3 or 6 or 7)
- 11) $\{3, 5\} \cap \{4, 5\} = \dots\dots\dots$ ($\{3\}$ or $\{5\}$ or $\{4\}$ or $\{3, 4, 5\}$)
- 12) If $\frac{5}{9} = \frac{15}{x}$, then $x = \dots\dots\dots$ (3 or 5 or 15 or 27)
- 13) $5 + 5 + 5 + 5 = 5 \times \dots\dots\dots$ (3 or 4 or 5 or 6)
- 14) The ratio between the side length of a cube and its base perimeter =
(4 : 1 or 1 : 3 or 3 : 1 or 1 : 4)

2 Complete each of the following:

- 15) The numbers 4, x , 12, 18 are proportional, then the value of $x = \dots\dots\dots$
- 16) The statistic data which we use in our daily life are two kinds: descriptive data and data.

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GEM / MATH / Primary 6



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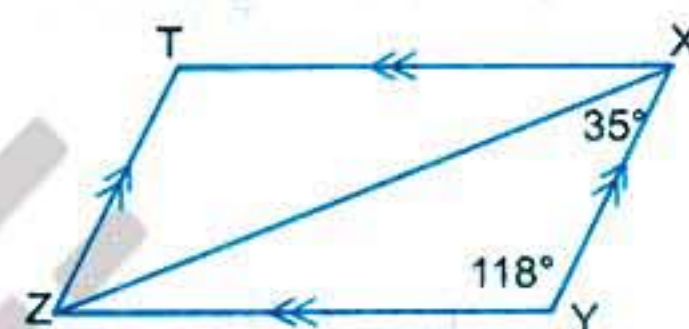


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- 17) If $a : b = 4 : 3$, $b : c = 2 : 3$, then $a : c = \dots\dots\dots$: $\dots\dots\dots$
- 18) The volume of a cube of edge length 4 cm = $\dots\dots\dots$ cm³
- 19) $3.572 \div \dots\dots\dots = 0.3572$
- 20) The ratio between the side length of a square and its perimeter = $\dots\dots\dots$: $\dots\dots\dots$

3 Answer the following questions

- 21) A ship for transporting goods among the countries. If it consumes 25 liters of fuel to cover a distance of 100 km, **calculate the rate of consumption of fuel.**
- 22) The sum of three dimensions of a cuboid is 48 cm and the ratio among the length of its dimensions is 5 : 4 : 3. **Find its volume.**
- 23) A picture was taken to an artificial scene with a drawing scale 1 : 100. If the real length of a tree is 8 meters. **Find its length in the picture.**
- 24) A shopkeeper for electric sets sold a refrigerator for L.E 3180. If the percentage of his profit is 6%, **find the buying price.**
- 25) In the opposite figure: XYZT is a parallelogram in which $m(\angle Y) = 118^\circ$ and $m(\angle YXZ) = 35^\circ$.



Find: 1) $m(\angle T)$ 2) $m(\angle TXZ)$

- 26) The following table shows the extra money which 100 workers got in a month in a factory.

They are as follows:

The extra money	20 –	30 –	40 –	50 –	60 –	70 –	Total
Number of workers	20	15	30	20	10	5	100

Draw the frequency curve of this distribution.

16

Dakhla Governorate - Maths Supervision

1 Complete each of the following:

- 1) 30 % of 60 = 20% of
- 2) Each what occupies room in space is called
- 3) The diagonals are perpendicular in each of
- 4) $\frac{1}{4} : \frac{1}{3} : \frac{1}{2} = \dots : \dots : 6$
- 5) The range of the set of values 7 , 3 , 6 , 9 , 5 is
- 6) If a , 3a , 5 and b are proportional, then b =

2 Choose the correct answer:

- 7) A sum of money was distributed between two persons, the first took the third of the money.
Then the ratio of distributed money between first and the second = :
(1 : 3 or 1 : 2 or 2 : 1 or 3 : 1)
- 8) All of the following are quantitative data except
(weight or age or favorite color or tallness)
- 9) If one angle of a parallelogram is right, then it is called a
(rhombus or rectangle or square or trapezium)
- 10) 75% of liter + 25% of dm^3 = (10 liters or 1000 mL or 100 dm or 100 cm)
- 11) If a is half b, and b is twice c, then a : c = (1 : 4 or 1 : 3 or 1 : 1 or 1 : 2)
- 12) 500 gm : $1\frac{1}{2}$ kg = : (1 : 6 or 1 : 5 or 1 : 4 or 1 : 3)
- 13) $2.7 + 0.09 = \dots$ (3 or 30 or 0.3 or 0.03)
- 14) Which of the following data is countable?
(favorite color or place of birth or age or blood species)
- 15) 39 days \simeq weeks. (5 or 6 or 7 or 8)

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GEM / MATH / Primary 6



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16) If $\frac{7}{13} = \frac{x}{52}$, then $x = \dots\dots\dots$ (14 or 21 or 28 or 25)

17) 18 kirats : 2 feddans = $\dots\dots\dots$ (in the simplest form) (3 : 4 or 4 : 3 or 9 : 2 or 3 : 8)

18) 4.6 liters = $\dots\dots\dots$ mL. (46 or 460 or 46000 or 4600)

19) In the opposite figure: The number of parallelograms which can be obtained is $\dots\dots\dots$.

(4 or 5 or 7 or 9)



20) The circumference of a circle = $\dots\dots\dots$ ($2\pi r$ or πr^2 or πr or $3r$)

3 Answer the following questions:

21) Two machines, the first ploughs 6 feddans at 3 hours, and the second ploughs 6 kirats at 10 minutes. Which of the two machines is better in performance?

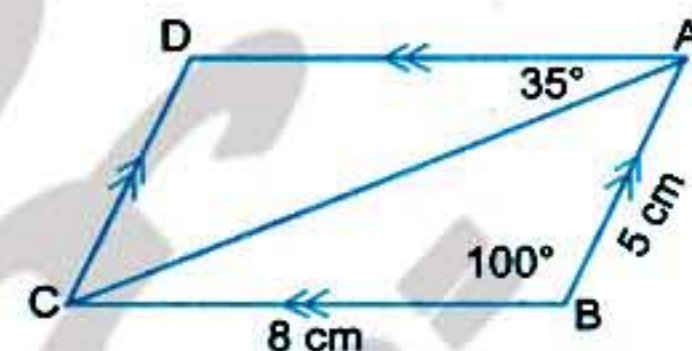
22) A cube of metal whose edge length = 12 cm needs to be melted down and converted into alloys in the form of a cube with dimensions 3 cm , 4 cm and 6 cm. Calculate the number of alloys that can be obtained.

23) Find the buying price and the profit of goods sold for 40250 pounds and the percentage of the profit is 15 %.

24) The opposite figure:

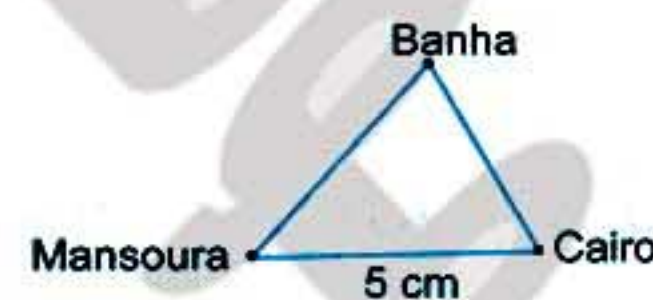
ABCD is a parallelogram in which AB = 5 cm, BC = 8 cm,
 $m(\angle B) = 100^\circ$ and $m(\angle DAC) = 35^\circ$

Find: 1) $m(\angle D)$ 2) $m(\angle ACD)$ 3) The perimeter of the parallelogram.



25) In the opposite figure:

Calculate the drawing scale if the real distance between Cairo and El-Mansoura is 350 km.



26) The following table shows sums of money in pounds paid by a group of contributors in a charity.

The sum	50 –	60 –	70 –	80 –	90 –	100 –
Number of contributors	5	7	10	12	10	7

Draw the frequency curve of this distribution.

17

Gharbia Governorate - East Tanta Educational Directorate

Answer the following questions:

1 Choose the correct answer from those given:

- 1) $87.56 \approx 87.6$ to the nearest (unit or tenth or ten or hundredth)
- 2) $\frac{4}{5} \div \frac{8}{10} = \dots\dots\dots$ ($\frac{56}{50}$ or $\frac{1}{2}$ or 1 or $\frac{2}{3}$)
- 3) $20\% \div \frac{1}{4} = \dots\dots\dots\%$ (5 or 0 or 60 or 80)
- 4) If 4, x , 12 and 18 are proportional quantities, then $x = \dots\dots\dots$ (2 or 4 or 6 or 8)
- 5) The volume of a cuboid whose dimensions are 2 cm, 3 cm and 5 cm = cm^3
(10 or 25 or 30 or 50)
- 6) The following data are quantitative expect
(tallness or weight or age or birth place)
- 7) is quantitative data. (Favorite color or Birth place or Blood species or the Volume)
- 8) $\{3, 5\} \cap \{4, 5\} = \dots\dots\dots$ ($\{3\}$ or $\{5\}$ or $\{4\}$ or $\{3, 4, 5\}$)
- 9) The circumference of a circle = ($2\pi r$ or πr^2 or πr or $3r$)
- 10) The measure of the straight angle = (180° or 90° or 360° or 120°)
- 11) A cube of volume 125 cm^3 , its base area =
(25 cm^2 or 25 cm or 5 cm^2 or 5 cm)
- 12) The range of the values 1, 3, 4, 4, 5 is (1 or 3 or 4 or 5)
- 13) $\frac{1}{2} = \dots\dots\dots$ (0.5 or 0.2 or 0.1 or 0.05)
- 14) $300 \text{ gm} : 1 \frac{1}{2} \text{ kg} = \dots\dots\dots$ (1 : 3 or 1 : 5 or 1 : 10 or 1 : 30)

2 Complete each of the following:

- 15) $\frac{1}{2} : \frac{1}{3} = \dots\dots\dots$
- 16) If $a : b = 2 : 3$, $b : c = 6 : 7$ then $a : c = \dots\dots\dots$
- 17) $0.375 = \frac{\dots\dots}{8}$
- 18) $6500 \text{ dm}^3 = \dots\dots\dots \text{ m}^3$



19) If the value of a frequency distribution lies between 29, 57, then the range of this distribution =

20) The number of the sets = $\frac{\text{the range}}{\dots\dots\dots}$

3 Answer the following questions

21) A primary school has 240 pupils in grade six. If 192 pupils of them succeeded, find the percentage of success in this school.

22) If the distance between two cities on a map is 3 cm with drawing scale 1 : 500000. Find the real distance.

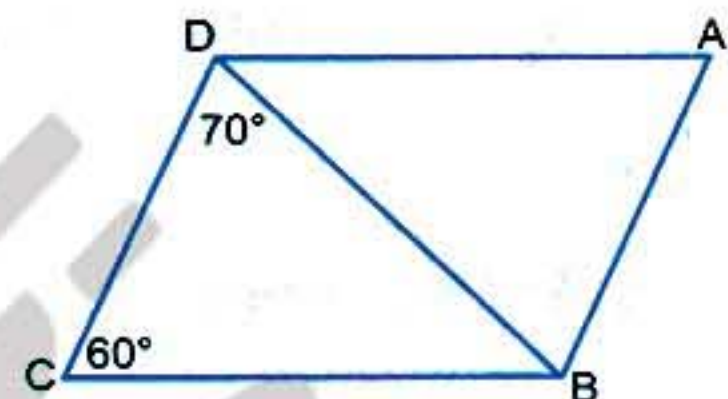
23) Two persons started a commercial business. The first paid L.E 5000 and the second paid L.E 8000. At the end of the year, the profit was L.E 3900. Calculate the share of each of them from the profit.

24) In the opposite figure:

ABCD is a parallelogram in which

$m(\angle C) = 60^\circ$ and $m(\angle BDC) = 70^\circ$

Find: 1) $m(\angle A)$ 2) $m(\angle ADB)$



25) A metallic cube of edge length 9 cm is needed to be converted into ingots in the shape of a cuboid. Each of them has dimensions of 3 cm , 3 cm and 1 cm. Calculate the number of ingots that are obtained.

26) The following table shows the ages of visitors to an exhibition within an hour of the day.

Visitors' ages	10 –	20 –	30 –	40 –	50 –	Sum
Number of visitors	6	9	12	10	8	45

1) What is the number of visitors whose ages are less than 40 years?

2) Draw the frequency curve of this distribution.

18

Beheira Governorate - Rasheed Educational Directorate

Answer the following questions:

1 Choose the correct answer from those given:

- 1) $0.3 \text{ dm}^3 = \dots\dots\dots \text{ cm}^3$ (3000 or 300 or 30 or 3)
- 2) $135 \times 15 \square 135 \div 15$ (< or > or = or \geq)
- 3) 27 months : 3 years = $\dots\dots\dots$: $\dots\dots\dots$ (9 : 1 or 9 : 10 or 3 : 4 or 4 : 3)
- 4) The number of sets = $\dots\dots\dots \div$ the length of the set.
(maximum value or minimum value or the range or descriptive data)
- 5) $(312 + \dots\dots\dots)$ is divisible by 5 (0 or 1 or 2 or 3)
- 6) $\dots\dots\dots$ is quantitative data.
(Birth place or Weight or Favorite color or Blood species)
- 7) $300 \text{ gm} : 1 \frac{1}{2} \text{ k.g} = \dots\dots\dots$ (1 : 3 or 1 : 5 or 1 : 10 or 1 : 30)
- 8) The following data are quantitative except the $\dots\dots\dots$
(age or tallness or favorite color or weight)
- 9) The cuboid has $\dots\dots\dots$ edges. (12 or 8 or 6 or 4)
- 10) $1.2 \text{ liters} + 800 \text{ cm}^3 = \dots\dots\dots \text{ liters}$ (2 or 3 or 4 or 5)
- 11) 20% of 40 k.g = $\dots\dots\dots \text{ k.g}$ (4 or 8 or 12 or 16)
- 12) $\frac{3}{4} \text{ liters} = \dots\dots\dots \text{ cm}^3$ (250 or 500 or 750 or 400)
- 13) If $\{3, 5\} \subset \{3, 7, x\}$ then $x = \dots\dots\dots$ (5 or 9 or 6 or 15)
- 14) If $a : b = 2 : 3$, $b : c = 3 : 5$ then $a : c = \dots\dots\dots$ (18 : 15 or 2 : 5 or 4 : 9 or 3 : 10)

2 Complete each of the following:

- 15) $\frac{9}{20} = \dots\dots\dots \%$
- 16) If $a : b = 2 : 3$, $b : c = 4 : 5$ then $a : c = \dots\dots\dots$: $\dots\dots\dots$
- 17) The parallelogram is a rectangle if $\dots\dots\dots$

- 18) $\frac{x+2}{8} = \frac{3}{4}$, then $x = \dots\dots\dots$
- 19) The range of the set of values 7 , 3 , 6 , 9 , 5 and 4 = $\dots\dots\dots$
- 20) The sum of measures of the interior angles of the triangles = $\dots\dots\dots$

3 Complete each of the following:

- 21) A vessel is in the shape of a cube, the length of its interior edge is 20 cm. If it's filled with honey, **calculate the capacity of the vessel in liter.**
- 22) The ratio between the weight of Hany and the weight of Ahmed is 5 : 6. If the weight of Ahmed is 60 kg, **find the weight of Hany.**
- 23) A box in a cuboid shape, its inner dimensions are 40 cm, 30 cm and 20 cm. **How many bars of soap we need to fill the box, if the dimensions of each bar of soap is 8 cm, 5 cm and 4 cm?**
- 24) A company for selling electric sets sells a TV set for 2100 pounds. If the percentage of the profit is 12 %, **find the buying price of the TV.**
- 25) If the distance between two cities is 180 km and the drawing scale is 1 : 900000. **How long is the distance between the cities on the map?**
- 26) A group of students donate amount of money in pounds shown in the following table:

Money in pounds	3 –	5 –	7 –	9 –	11 –	Total
Number of students	7	10	15	10	8	50

Draw the frequency curve of this distribution.



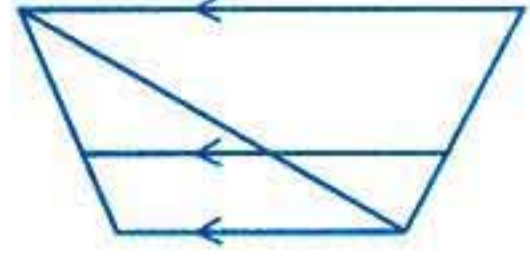
19

Matrouh Governorate - Directorate of Education

1 Complete each of the following:

- 1) The volume of a cuboid is 64 cm^3 and the area of its base is 16 cm^2 , then its height = cm
- 2) The area of the triangle = $\frac{1}{2} \times \dots \times \dots$
- 3) $65 \text{ dm}^3 = \dots$ liter
- 4) The ratio between the side length of the square and its perimeter = :
- 5) The four sides are equal in length in each of
- 6) $\frac{3}{10} = \dots \%$

2 Choose the correct answer from those given:

- 7) The range of the set of values 7 , 3 , 6 , 9 and 5 is (4 or 2 or 6 or 12)
- 8) $\frac{3}{4} = \dots$ (decimal form) (0.2 or 0.5 or 25 or 0.75)
- 9) $\frac{24}{5} = \dots$ ($4 \frac{1}{5}$ or $3 \frac{2}{5}$ or $4 \frac{4}{5}$ or $2 \frac{4}{5}$)
- 10) If one angle of a parallelogram is right, then is called a
(rectangle or square or rhombus or cube)
- 11) If $\frac{4}{6} = \frac{12}{x}$, then $x + 2 = \dots$ (16 or 18 or 20 or 22)
- 12) An agricultural tractor ploughs 28 feddans in 4 hours, the time which is needed to plough 42 feddans is (4 or 6 or 7 or 8)
- 13) In the opposite figure:
The number of trapezoids =
 (3 or 4 or 2 or 5)
- 14) If $\{3, 5\} \subset \{3, 7, x\}$, then $x = \dots$ (5 or 9 or 6 or 15)
- 15) $0.12 = \dots \%$ (1.2 or 12 or 0.12 or 120)
- 16) $\frac{3}{4}$ liter = (75 ml or 7.5 dm^3 or 750 cm^3 or 0.075 cm^3)

90

GEM / MATH / Primary 6

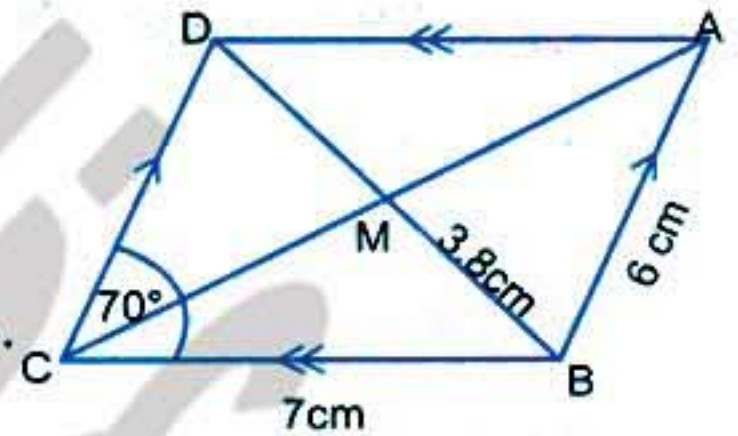


هذا العمل حصري على موقع ذاكرولى التعليمي ولا يسمح بنشره فى أى مواقع أخرى
لمزيد من أعمالنا تفضل بزيارة موقعنا على الانترنت <https://www.zakrooly.com>

- 17) $0.35 + \frac{9}{20} = \dots\dots\dots\%$ (44 or 70 or 80 or 55)
- 18) The following data are descriptive except $\dots\dots\dots$
(color or hobby or tallness or blood type)
- 19) If $\frac{x}{15} = \frac{2}{5}$, then $x + 4 = \dots\dots\dots$ (6 or 8 or 10 or 12)
- 20) If the volume of a cube = 27 cm^3 , then the area of its one face = $\dots\dots\dots \text{ cm}^2$.
(9 or 12 or 18 or 24)

3 Answer each of the following:

- 21) The ratio between the area of two pieces of land is 5 : 9, if the area of one of them is more than the other by 132 m^2 , **find the area of the other land.**
- 22) If the cost price of a set of electric appliances is L.E 72000 and it is sold at 12% profit, **calculate the selling price.**
- 23) A box contains 12 liters of oil, it is wanted to be put in small bottles, the capacity of each is 400 cm^3 . **Calculate the number of bottles which are needed.**
- 24) In the opposite figure:
ABCD is a parallelogram in which $AB = 6 \text{ cm}$, $BC = 7 \text{ cm}$,
 $BM = 3.8 \text{ cm}$ and $m(\angle C) = 70^\circ$, without using geometric tools.
Find: $m(\angle ADC)$ and the perimeter of ΔBCD .
- 25) A picture was taken to an artificial scene with a drawing scale 1 : 100, if the real length of a tree is 8 meters. **Find its length in the picture.**
- 26) The following table shows the marks of 100 students in one month in a maths test.



Marks	10 –	20 –	30 –	40 – 50	Total
Number of students	15	30	40	15	100

Draw the frequency curve of this distribution.

20

Aswan Governorate - Directorate of Education

Answer the following questions:

1 Choose the correct answer from those given:

- 1) The smallest prime number is (1 or 2 or 3 or 4)
- 2) $16 : 64 =$ (in its simplest form) ($\frac{1}{8}$ or $\frac{1}{4}$ or $\frac{1}{3}$ or $\frac{1}{2}$)
- 3) If the following numbers 4 , 6 , 12 , x are proportional then $x =$
(8 or 12 or 16 or 18)
- 4) If one angle of a parallelogram is a right angle, then it is called a
(rectangle or square or rhombus or trapezium)
- 5) The center of the set (10 – 20) is (15 or 20 or 25 or 30)
- 6) The sum of measures of the interior angles of the triangle =
(90° or 108° or 120° or 180°)
- 7) If the numbers 3 , 5 , x , and 20 are proportional, then $x =$
(6 or 12 or 15 or 21)
- 8) $36.5 +$ = 3.65 (1 or 10 or 100 or 1000)
- 9) $45 \text{ dm}^3 =$ cm^3 (450 or 0.45 or 45000 or 45)
- 10) 6 months : 2 years = (3 : 1 or 1 : 3 or 1 : 4 or 4 : 1)
- 11) The ratio between 250 grams : $\frac{1}{2}$ k.g =
($\frac{1}{2} : \frac{1}{4}$ or $\frac{1}{4} : \frac{1}{2}$ or $1 : \frac{1}{4}$ or $\frac{1}{4} : 1$)
- 12) If the numbers 2 , 5 , 6 , x are in proportion, then $x =$
(3 or 12 or 15 or 30)
- 13) If $3 \in \{2, x\}$ then $x =$ (1 or 3 or 5 or 6)
- 14) The ratio between 27 months and 3 years is
(3 : 4 or 9 : 1 or 9 : 10 or 27 : 30)

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GEM / MATH / Primary 6



هذا العمل حصري على موقع ذاكرولى التعليمي ولا يسمح بنشره فى أى مواقع أخرى
لمزيد من أعمالنا تفضل بزيارة موقعنا على الانترنت <https://www.zakrooly.com>

2 Complete each of the following:

- 15) $\frac{3}{4} = \dots\dots\dots$ (as decimal form)
- 16) If Hazem drinks 21 glasses of juice in a week then the rate of which he drinks in one day = $\dots\dots\dots$ glasses / day.
- 17) $0.12 = \dots\dots\dots\%$
- 18) $85 \text{ dm}^3 = \dots\dots\dots$ liter
- 19) Height, age and weight represent $\dots\dots\dots$ data.
- 20) The range of values 7 , 3 , 6 , 9 , 5 equals $\dots\dots\dots$

3 Complete each of the following:

- 21) If the ratio between the lengths of two roads is 2 : 5 and the difference between the lengths of two roads is 21 km. **Find the length of each road.**
- 22) If the length of a fence of a villa in a design is 5 cm, and its real height length is 6 m. **Find the drawing scale of the length.**
- 23) If the price of a T- shirt is 65 pounds and it has a discount of 15 % . **Find its price after discount.**
- 24) A cuboid its volume is 64 cm^3 and its base area is 16 cm^2 . **Find the height of the cuboid.**

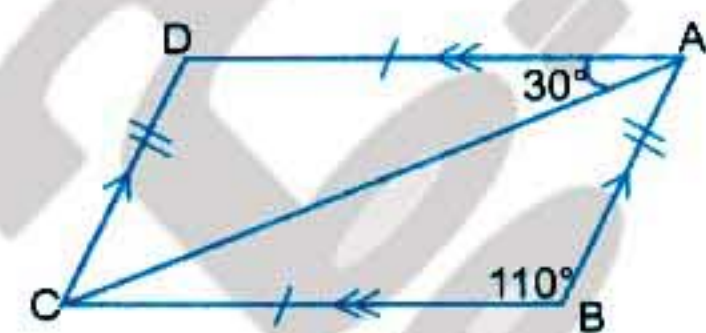
- 25) In the opposite figure:

ABCD is a parallelogram:

$m(\angle B) = 110^\circ$ and $m(\angle DAC) = 30^\circ$

Find:

- 1) $m(\angle D)$ 2) $m(\angle BAC)$



- 26) In the following table represents the degrees of 50 pupils in one month of mathematics test.

The degree	10 –	20 –	30 –	40 – 50	Sum
Number of pupils	5	15	20	10	50

Draw the frequency curve of this distribution.

21

Kafr El-Sheikh Governorate - Directorate of Education

1 Complete each of the following:

- 1) Birth place is data.
- 2) The area of the parallelogram =
- 3) $\frac{1}{2}$ kilometer : 250 meters = :
- 4) The volume of the cuboid = \times
- 5) A circle of diameter length 14 cm, its circumference equals ($\pi = \frac{22}{7}$)
- 6) The ratio between the side length of an equilateral triangle and its perimeter
= :

2 Choose the correct answer from those given:

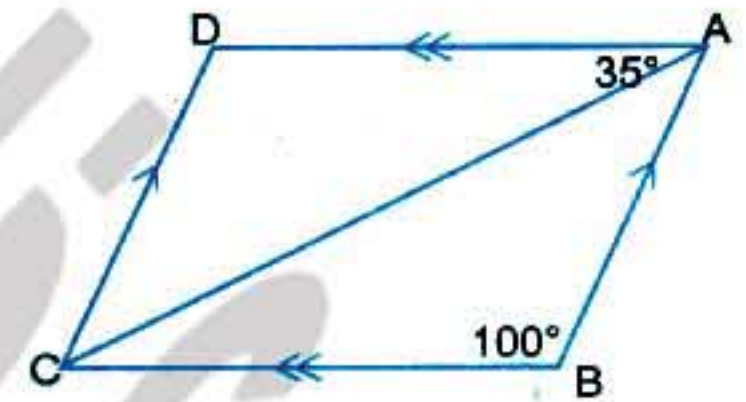
- 7) 3 {1, 2, 3} (\in or \notin or \subset or \supset)
- 8) The range of the set of the values 50, 25, 35, 20 is (10 or 20 or 30 or 40)
- 9) $\frac{3}{10} =$ % (20 or 30 or 40 or 50)
- 10) If 4, 6, 12, x are proportional numbers, then $x + 2 =$
(16 or 18 or 20 or 22)
- 11) $12000 \text{ cm}^3 =$ dm^3 (11 or 12 or 13 or 15)
- 12) If the range is 40 and the length of the set is 5, then the number of sets =
(5 or 6 or 7 or 8)
- 13) If $\frac{x}{15} = \frac{2}{5}$, then $x + 4 =$ (6 or 8 or 10 or 12)
- 14) All the following data are quantitative except the
(length or weight or volume or color)
- 15) $5 \text{ cm}^3 =$ milliliters. (5000 or 0.005 or 5 or 50)
- 16) $12\% + 3\% =$ (4% or 36% or 15% or 4)
- 17) If one of the angles of a parallelogram is right, then it will be
(square or rhombus or rectangle or trapezium)
- 18) If Hazem drinks 21 glasses of milk weekly, then the rate of what he drinks daily
is (3 glasses or 7 glasses or 14 glasses or 20 glasses)



- 19) If $\frac{8}{x} = 0.5$, then $x = \dots\dots\dots$ (8 or 12 or 16 or 21)
- 20) If the volume of a cube equals 125 cm^3 , then its base area = $\dots\dots\dots$
(35 cm^2 or 25 cm^2 or 15 cm^2 or 5 cm^2)

3 Answer the following:

- 21) The ratio between the lengths of the sides of a triangle is $2 : 3 : 4$, if the perimeter of the triangle is 54 cm . Find the length of each side of the triangle.
- 22) If the length of the Suez Canal on a map of drawing scale $1 : 1100000$ is 15 cm . Find its real length in kilometers.
- 23) Khaled bought a flat for L.E 150000 . He sold it at 5% loss. Calculate the selling price of the flat.
- 24) In the opposite figure:
ABCD is a parallelogram in which
 $m(\angle ABC) = 100^\circ$, $m(\angle DAC) = 35^\circ$,
Find: $m(\angle ADC)$ and $m(\angle ACD)$
- 25) A container has 12 liters of honey. If we want to put them in small bottles, the capacity of each is 400 cm^3 . Calculate the number of bottles which are needed for that.
- 26) The following table shows the number of hours which spent by 40 pupils to study their lessons daily.



Number of hours	1 –	2 –	3 –	4 –	5 – 6	Total
Number of pupils	6	3	8	12	11	40

Represent these data using the frequency curve.

22

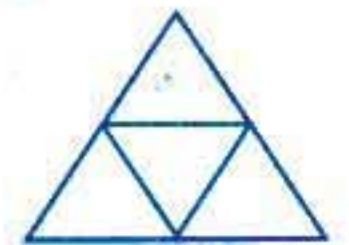
Ben Suif Governorate - Beni Suif Educational Directorate

1 Complete each of the following:

- 1) Area of square = side length \times
- 2) If one angle of a parallelogram is right, then it is called a
- 3) The ratio between the two numbers 16 , 64 = : (in the simplest form)
- 4) A wooden box in the form of a cube, its external volume is 1000 cm^3 , its capacity is 729 cm^3 , then the volume of the wood of the box = cm^3
- 5) The kinds of statistics data are : data and data
- 6) The rate of production of a factory produces 1000 juice cans in 4 hours = cans / hour

2 Choose the correct answer from those given:

- 7) $\frac{1}{5} =$ % (10 or 20 or 30 or 40)
- 8) If the marks of 3 students in one exam is (27 , 36 , 57), then the range of these marks = (30 or 20 or 40 or 50)
- 9) The following data are quantitative except (age or telephone number or birthday date or favorite color)
- 10) The sum of measures of the interior angles of a triangle = (180° or 90° or 80° or 108°)
- 11) The number 235 is divisible by (2 or 3 or 5 or 7)
- 12) If the number 5 , 8 , 15 , x are proportional then $x =$ (21 or 42 or 24 or 15)
- 13) The circumference of the circle = (πr or πr^2 or $2\pi r$ or $3\pi r$)
- 14) The following data are descriptive except (address or tallness or favorite color or name)
- 15) In the opposite figure : the number of triangles = (4 or 5 or 7 or 9)
- 16) If $\frac{4}{6} = \frac{12}{x}$, then $x =$ (16 or 18 or 20 or 22)



96

GEM / MATH / Primary 6

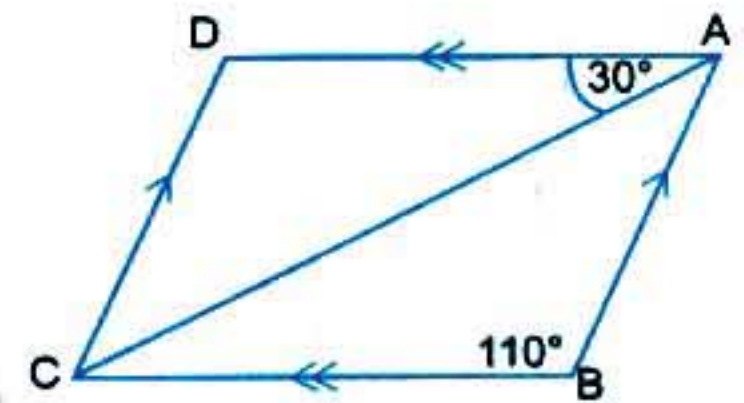


هذا العمل حصري على موقع ذاكرولى التعليمي ولا يسمح بنشره فى أى مواقع أخرى
لمزيد من أعمالنا تفضل بزيارة موقعنا على الانترنت <https://www.zakrooly.com>

- 17) $\frac{3}{4} = \dots\dots\dots$ (in the decimal form) (0.2 or 0.5 or 0.75 or 0.25)
- 18) The ratio between $\frac{1}{2}$ k.g : 700 gm = $\dots\dots\dots$ (2 : 7 or 5 : 7 or 7 : 5 or 50 : 7)
- 19) 215 is a number that is divisible by $\dots\dots\dots$ (4 or 5 or 6 or 7)
- 20) If $\frac{2}{7} = \frac{x}{21}$, then $x = \dots\dots\dots$ (6 or 7 or 12 or 21)

3 Answer the following:

- 21) If the ratio between the heights of three buildings is 3 : 4 : 5 and if the height of the first buildings is 12 meters. **Calculate the height of the second and third building.**
- 22) If the buying price of some electric sets is L.E 72 000 and they were sold at 12% profit. **Calculate the selling price.**
- 23) In the opposite figure:
ABCD is a parallelogram in which
 $m(\angle B) = 110^\circ$, $m(\angle DAC) = 30^\circ$,
Find: $m(\angle D)$ and $m(\angle ACD)$
- 24) 10 liters of water were poured in a vessel in the shape of a cuboid, its base is square of side length 25 cm. **Find the height of the water in the vessel.**
- 25) An engineering design for a villa is made. If the height of the fence of the villa in the design 5 cm and its real height is 3 m. **Find the drawing scale.**
- 26) The following table shows the marks of 100 students in one month in maths test.



Marks	10 –	20 –	30 –	40 – 50	Sum
Number of students	15	30	40	15	100

Draw the frequency curve for this distribution.

23

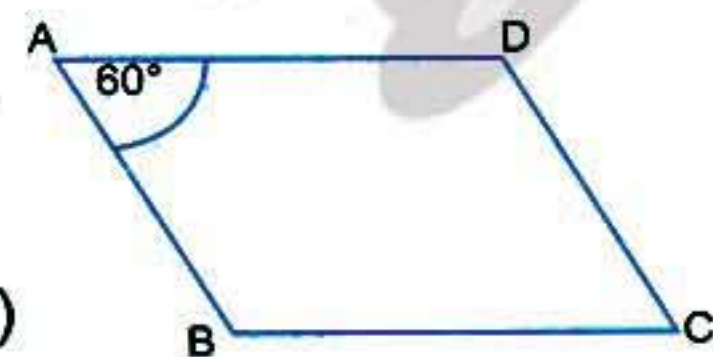
Sohag Governorate - Grga Educational Directorate

1 Complete each of the following:

- 1) The area of the triangle = $\frac{1}{2}$ the base length \times
- 2) $\frac{3}{4} =$ (decimal form).
- 3) $\frac{3}{10} =$ %
- 4) If $\frac{2}{3} = \frac{10}{x}$, then $x =$
- 5) = maximum value - minimum value.
- 6) If the volume of a cuboid equals 64 cm^3 and its base area is 16 cm^2 , then its height = cm

2 Choose the correct answer from those given:

- 7) $250 \text{ gm} : \text{kg} =$ (1 : 4 or 1 : 2 or 2 : 1 or 3 : 4)
- 8) If $\frac{x}{5} = 40\%$, then $x =$ (2 or 4 or 5 or 8)
- 9) $65 \text{ dm}^3 =$ liters (6.5 or 65 or 650 or 6500)
- 10) If $\frac{75}{100} = \frac{7.5}{\dots}$ (150 or 75 or 50 or 10)
- 11) The sum of measures of each two consecutive angles of a parallelogram = (180° or 90° or 60° or 45°)
- 12) is from the quantitative data.
(Color or Age or Birth place or Blood species)
- 13) The ratio between $\frac{1}{2} \text{ kg} : 700 \text{ gm} =$ ($2 : 7$ or $5 : 7$ or $7 : 5$ or $50 : 7$)
- 14) $\frac{1}{5} =$ (decimal form) (0.2 or 0.5 or 0.75 or 0.25)
- 15) If $\frac{2}{7} = \frac{x}{21}$, then $x =$ (6 or 7 or 12 or 21)
- 16) In the opposite figure: ABCD is a parallelogram,
 $m(\angle A) = 60^\circ$,
then $(\angle B) =$ (30° or 60° or 90° or 120°)
- 17) The range of the values 7 , 3 , 6 , 9 , 5 is (4 or 2 or 6 or 8)

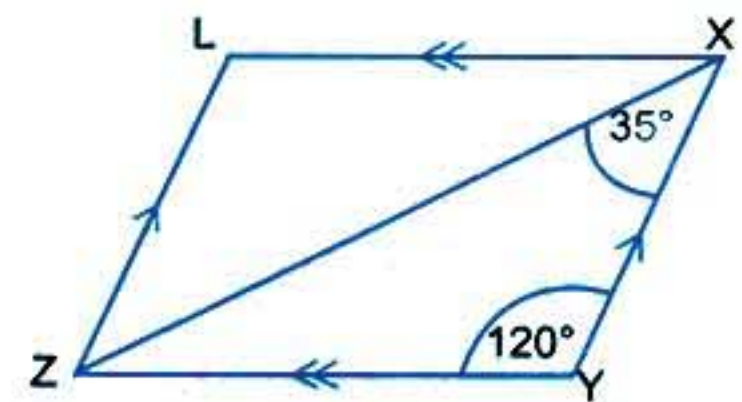


- 18) If $\frac{x}{5} = 40\%$, then $x + 3 = \dots\dots\dots$ (5 or 6 or 7 or 8)
 19) $65 \text{ m}^3 = \dots\dots\dots$ liters (60 or 65 or 70 or 65000)
 20) $\frac{1}{4} = \dots\dots\dots$ (0.2 or 0.5 or 0.25 or 0.75)

3 Answer the following:

- 21) If Hassan drinks 21 glasses of juice weekly. Calculate the rate of what he drinks daily.
 22) Find the value of x if 3, 4, 9, x are proportional.
 23) If the distance between two cities on a map is 3 cm and the real distance between them is 9 km. Find the drawing scale.

- 24) In the opposite figure XYZL is a parallelogram in which
 $m(\angle Y) = 120^\circ$, $m(\angle YXZ) = 35^\circ$, (without measuring):



- Find: 1) $m(\angle L)$ 2) $m(\angle LXZ)$
 25) A container has 12 liters of honey, is wanted to be put in smaller vessels (bottles) the capacity of each is 400 cm^3 . Calculate the number of bottles which are needed for that.
 26) The following table shows the marks of 50 students in mathematics.

Marks	10 –	20 –	30 –	40 – 50	Sum
Number of students	5	15	20	10	50

- 1) Draw the frequency curve for this distribution.
 2) What is the number of students who got less than 30 marks?
 3) What is the number of students who got 40 marks and more?

24 Assiut Governorate - Administration of Distinguished & Governmental Language Schools

Answer the following questions:

1 Choose the correct answer from those given:

1) $4 \frac{1}{8} \times 2 \frac{2}{3} = \dots\dots\dots$ (1 or 10 or 11 or 111)

2) The ratio between the side length of square and its perimeter equals $\dots\dots\dots$
(1 : 4 or 4 : 1 or 3 : 1 or 1 : 3)

3) If one angle of a parallelogram is right, then it is called a $\dots\dots\dots$
(square or rhombus or cube or rectangle)

4) $\frac{3}{4} = \dots\dots\dots\%$ (0.75 or 75 or 750 or 7.5)

5) $48.684 \simeq \dots\dots\dots$ (to nearest hundredth). (48.68 or 48.7 or 48 or 48.69)

6) The following data are descriptive except $\dots\dots\dots$
(color or blood type or age or hobby)

7) $65 \text{ dm}^3 = \dots\dots\dots$ liters (560 or 650 or 65)

8) $\frac{1}{2} = \dots\dots\dots$ (0.5 or 0.2 or 0.1 or 0.05)

9) 39 day $\simeq \dots\dots\dots$ weeks (5 or 6 or 7 or 8)

10) The range of the set of the values 7 , 3 , 9 , 5 , 6 is $\dots\dots\dots$ (4 or 2 or 6 or 12)

11) A cube of volume 125 cm^3 , then the area of its base = $\dots\dots\dots$
(25 cm^2 or 25 cm or 5 cm^2 or 5 cm)

12) The following data are quantitative except $\dots\dots\dots$
(the degree or date of birth or age or blood species)

13) If $\frac{4}{6} = \frac{12}{x}$, then $x = \dots\dots\dots$ (10 or 18 or 20 or 22)

14) The circumference of circle = $\dots\dots\dots$ (πr or πr^2 or $2\pi r$ or $3\pi r$)

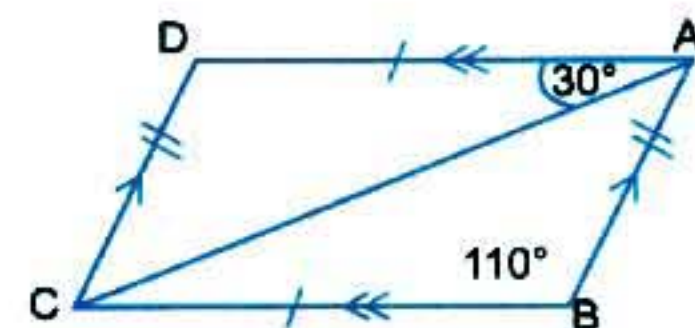
2 Complete each of the following:

15) If $\frac{2}{7} = \frac{8}{x}$, then $x = \dots\dots\dots$

16) If $A : B = 4 : 3$, $B : C = 2 : 3$ then $A : C = \dots\dots\dots$



- 17) If the marks of 6 students in an exam is 29 , 33 , 57 , 40 , 36 , 49, then the range of these marks =
- 18) The opposite figure shows a parallelogram in which:
 $m(\angle B) = 110^\circ$, $m(\angle DAC) = 30^\circ$
Find: $m(\angle BAC)$
- 19) The longest cord in the circle is
- 20) The height is data



3 Answer the following:

- 21) If the ratio between the lengths sides of triangle is 2 : 3 : 4 and its perimeter is 54 cm then **find the length of each side of the triangle.**
- 22) If the length of the Suez Canal on a map of drawing scale 1 : 1100 000 is 15 cm.
Find its real length in kilometers.
- 23) Nada bought an automatic washing machine for L.E 3600 and the discount was 10%
calculate the original price of the washing machine before the discount.
- 24) A sweet case in the shape of a cuboid, its internal dimensions are 21 cm , 18 cm and 6 cm is wanted to be filled with pieces of chocolate, each of them is a cuboid with dimensions 3 cm , 3 cm and 1 cm. **Calculate the number of chocolate pieces which fill the case completely.**
- 25) A cube-shaped vessel, its internal edge length is 30 cm is filled with food oil.
 1) **Calculate the capacity of the vessel.**
 2) If the price of one liter of food oil is 9.5 pounds, **calculate the price of the whole amount of oil.**
- 26) The following table shows the number of hours spent by 46 pupils to study their lessons daily.

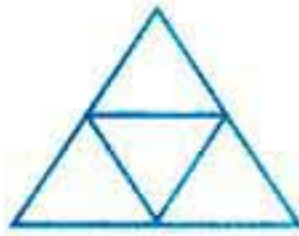
Number of hours	1 –	2 –	3 –	4 –	5 – 6	Total
Number of pupils	6	3	8	12	11	40

Represent these data using the frequency curve.

25

Qena Governorate - Deshna Directorate

1 Choose the correct answer from those given:

- 1) The following data are quantitative expect
(age **or** weight **or** favorite color **or** length)
- 2) $\frac{3}{4}$ liter =
(75 mm **or** 750 cm³ **or** 7.5 dm³ **or** 0.075 m³)
- 3) The ratio between 27 months, 3 years is
(1 : 9 **or** 3 : 4 **or** 10 : 9 **or** 27 : 30)
- 4) If one of the angles of the parallelogram is right and the two adjacent sides are equal in length, then this shape is called (rhombus **or** square **or** triangle **or** rectangle)
- 5) $\frac{24}{5}$ =
(4 $\frac{1}{5}$ **or** 4 $\frac{4}{5}$ **or** 3 $\frac{2}{5}$ **or** 2 $\frac{4}{5}$)
- 6) The range of the values 50 , 25, 35 and 20 is (10 **or** 20 **or** 30 **or** 70)
- 7) In the opposite figure: the number of triangles =
(4 **or** 5 **or** 7 **or** 9)
- 
- 8) If the real length of a tree is 6 m and the drawing length is 6 cm, then the drawing scale =
(1 : 10 **or** 1 : 100 **or** 1 : 1000 **or** 1 : 600)
- 9) $\frac{4}{5}$ = % (50 **or** 60 **or** 70 **or** 80)
- 10) 6500 dm³ = m³ (6.5 **or** 65 **or** 605 **or** 650)
- 11) The volume of a cube of edge length 3 cm = cm³ (8 **or** 27 **or** 64 **or** 125)
- 12) The opposite data are quantitative data except
(age **or** weight **or** temperature degree **or** blood species)
- 13) $\frac{4}{5}$ = (decimal form) (0.2 **or** 0.8 **or** 0.25 **or** 0.75)
- 14) The ratio between 250 grams : $\frac{1}{2}$ kg =
($\frac{1}{2}$: $\frac{1}{4}$ **or** $\frac{1}{4}$: $\frac{1}{2}$ **or** $1\frac{1}{4}$: $\frac{1}{2}$ **or** $\frac{1}{4}$: $1\frac{1}{2}$)

2 Complete each of the following:


- 15) The ratio between the side length of the equilateral triangle and its perimeter = :

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GEM / MATH / Primary 6



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- 16) $5 + 5 + 5 + 5 = 5 \times \dots$
- 17) The next figure in the following pattern  is \dots
- 18) If $\frac{5}{9} = \frac{15}{x}$, then $x = \dots$
- 19) The difference between the greatest value and the smallest value of the set of values is called \dots
- 20) The sum of any two consecutive angles in a parallelogram = \dots°

3 Answer the following questions:

- 21) Ahmed bought a car for L.E 25000. If he wants to sell it with a profit 10%, **find the selling price.**
- 22) A container has 12 liters of honey. We need to distribute it on small bottles with each one of capacity 400 cm^3 . **Calculate the number of the needed bottles.**
- 23) The sum of edge lengths of a cube is 132 cm. **Calculate the volume of the cube.**
- 24) A map is drawn for some cities with drawing scale 1 : 400000, if the real distance between two cities is 46 km, **find the distance between them on the map.**
- 25) In a primary school, the total number of the pupils is 540 pupils. If the ratio between the number of boys and the number of girls is 4 : 5, then **calculate the number of boys and girls.**
- 26) The following table shows the extra money which 100 workers got in a month in a factory, they are as follows:

The extra money	20 –	30 –	40 –	50 –	60 –	70 –	Total
Number of students	20	10	30	25	10	5	100

- 1) **What is the number of workers who obtained extra money less than 50 pounds?**
- 2) **Draw the frequency curve of this distribution.**



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